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THE

California Horticulturist

AND

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FLORAL MAGAZINE.

C. STEPHENS, Editor.

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THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. JANUARY, 1873. No. 1.

OUR FAVORITE FLOWERING BULBS.

BY F. A. MILLER.

Year by year our people show a growing appreciation of flowering bulbs; and although the simple treatment needed by many of these favorites is as yet a mystery to some, it is gratifying to see that others have met with marked success. I have seen in some collections (particularly in those of our lady amateur-gardeners), magnificent spikes of Hyacinths, beautiful clusters of Narcissus, Cyclamens covered with their nodding gems of white or purple, and Lilies, Amaryllis, Tulips, Ranunculus, Anemones, Gladiolus, Diclytras, Gloxinias, Tigridias, etc., all grown with remarkable success, and worthy objects for the admiration of their lady friends, who doubtless determine to follow the example by adding some of these gems to their own collections of plants, which without some of the varieties above named, are certainly very incomplete.

But a few years since, our florists and seedsmen imported flowering bulbs in large quantities, but could not find a ready sale for them, and the business of importing bulbs proved very unprofitable. This could not be expected to be otherwise, when it is taken into consideration that in a new and really undeveloped country, floriculture, as with all industries and pursuits, must go through the various stages of development. Flowers, although dearly loved by both old and young, as our surroundings will now testify, are yet considered by many of our wealthy men as very unnecessary luxuries, and are planted and paid for in many instances merely for appearance sake. It is not surprising that to such men a pine, a sunflower or a poppy seems more valuable than a hyacinth, a snowdrop or a lily of the valley. It is the size of the thing, the show that it makes, the quantity for the small amount of money invested, that has hitherto been the principal consideration with our moneyed men. Thanks, however, to the ladies, who have gradually inaugurated a new order of things, and who have themselves begun to realize the pleasures and delights to be derived from the care of plants, which offer new and varied delights through the different seasons of the year — in the garden, the conservatory or in the window.

Bulbous-rooted plants vary as much as all other plants in their time of flowering; while some may be had in bloom during the winter months in the

conservatory or in the window, others will not flower until late in the autumn.

The bulbs which may be planted now, in order to have them in bloom during the early part of the coming year, are:

Hyacinths, very full instructions for treatment of which were published in the Horticulturist in the January number of 1871. Hyacinths may now be planted in the open ground, and may be expected to flower in March and April. Before planting, the soil should be manured and well worked over; plant one and a half to two inches below the surface, and keep clean from weeds. Hyacinths are perfectly hardy. If planted in pots, for the purpose of having them flower early, the bulbs should be planted so as to be just covered by the soil. After planting, the pots should be set in a dark but moderately warm place, where roots will be formed before the leaves develop themselves. Under ordinary circumstances, from three to four weeks in a dark room will be sufficient. When bringing them into the light, place them in a warm situation, and give a liberal supply of water, and in thirty days after removing them into the light, they may be expected to flower. I prefer covering the pots, containing the bulbs, to the depth of at least six inches in sand or leaf-mould, for about thirty days, in order to bring foliage and the flowerstocks to perfection at the same time.

If Hyacinths are grown in glasses, good strong bulbs should be selected, the water should be changed at least once a week, and it will prove advantageous to keep them in a dark and moderately warm room for at least two weeks.

I prefer single Hyacinths to the double varieties; their flowers will generally come out more perfect, and the spikes fuller and more compact; the single varieties are also more fragrant.

Tulips come into flower later than Hyacinths, and require more warmth and less moisture. They are not so well adapted for pot culture, although I have seen very fine specimens grown in pots, under ordinary treatment; the pots for Tulips should be of greater depth, and the bulb should be planted deeper, say, from three to four inches below the surface. They should be planted in a warm situation. Tulips do not require much manure, but the soil should be worked to greater depth even than for Hyacinths.

The Cyclamen is one of my favorite bulbs, but it is only adapted for the conservatory or the window, where it will always be found blooming from November until May, and even later, after which time it should be allowed to rest, receiving only sufficient moisture to keep it from shrinking. During the time of flowering a liberal supply of water should be given, and partial shade is beneficial. One-third of the bulb should be within the soil, and two-thirds of it above. I have a good number of varieties in bloom now, the best of which I have raised from seed, which was planted a year ago. The young bulbs are now producing an abundance of charming blossoms of various colors, highly valuable for fine bouquets and baskets of flowers.

The Narcissus family is grown here without any difficulty, to great perfection, both in the house and in the open ground; some of them are highly perfumed and are particularly attractive. If planted now, we may have them in bloom in February in the house, and in March in the open ground. Some of the varieties are popularly known as Jonquils; others as Daffodils; double and single, white and yel-

low, some having white flowers with a red cup-like centre; they present a great diversity, and are both effective and pleasing in groups and as single plants, wherever they grow.

Anemones are not as frequently met with as could be desired, yet they are a most interesting and valuable class of plants, and as easily cultivated in pots as in the ground. We may have them in flower here from March until July. The flowers are showy, and among the various colors we find blue, white, red, violet, rose, yellow and striped, both double and single. The bulbs should now be planted two inches deep in well prepared soil.

The Ranunculus, also, is another valuable bulbous-rooted plant, which should be planted now, in order to have it bloom early. The treatment is the same as that required for the Anemone.

There are many other bulbs which should not be withheld from our gardens and conservatories as early and charming flowerers, but I shall postpone their description to some future time.

NATIVE HEDGES.

BY DR. A. KELLOGG.

During the twenty-four hours last past, two gentlemen of the press—no wise in communication—have inquired, "What native shrub would be most suitable for a hedge?" Taking this timely query as perhaps indicative of a public desire for information, we pen our answer, given on the spur of the moment. The most feasible for general purposes appears to be the White Thorn, (*Ceanothus incanus*), for the following reasons: It is a stout, robust and rapid grower, very tough and of rigid resistance, somewhat thorny, as the popular name indicates; bears cutting back to thicken, half hacking and weaving, and trims well; is not apt to die out, singly or in patches, its vitality being most remarkable—cut even with the ground, it springs up speedily, and repairs itself in two or three years, having such firm hold of roots upon the ground, as to require bonfires to exterminate them. Managed with ordinary care, it can be relied upon to turn both large and small cattle. In its native state, it grows from five to ten feet, and in some localities fifteen. This shrub has a wide range, from the coast, in this vicinity, south, to 7,000 or 8,000 feet on the Sierra Nevada Mountains; hence, well suited for very general use.

For many years we have collected the seed for culture, as an ornamental shrub. A word or so of detailed description may be allowed in addition: The stem or trunk is pale white, with greenish tinge; smooth bark; twigs numerous, almost as white as snow; leaves crowded, egg-shaped, blunt, and slightly heart-shaped at the base, light green above, with a soft velvety bloom most pleasing to the eye; whiter beneath, thick and leathery; flowers white, in clustered bolls or heads, from thick spurs, lateral or terminal, but not remarkable for fragrance. The seed is somewhat triangular, minutely worty and sub-three-horned; ripens from first to last of September. It has also a desirable disposition to spread its branches, and naturally arches off and interlaces. This species, unlike many *Ceanothi*, is never browsed on by cattle, and, therefore, needs no protection in its incipient growth. Found on dry mountain knolls and in alluvial lands of creeks, etc. It would seem to suit well the river and valley lands. Should any choose a trim, erect grower, this evergreen might give place to others equally ornamental, but less useful.

SELECT PLANTS

(Exclusive of Timber Trees) readily eligible for Victorian Industrial Culture, with Indications of their Native Countries and some of their Uses—an Enumeration offered

BY BARON FRED. VON MUELLER.

[Continued from page 354 of November number.]

Boehmeria nivea, *Gaudichaud.**—The Ramee or Rheea. Southern Asia, as far east as Japan. This bush furnishes the strong and beautiful fibre woven into the fabric which inappropriately is called grass-cloth. The bark is softened by hot water or steam, and then separated into its tender fibres. The best is obtained from the young shoots; it is glossy, tough and lasting, combining to some extent the appearance of silk with the strength of flax. The ordinary market value of the fibre is about £40 per ton; but Dr. Royle mentions that it has realized, at times, £120. The seeds are sown on manured or otherwise rich and friable soil. In the third year, or under very favorable circumstances even earlier, it yields its crops, as many as three annually. The produce of an acre has been estimated at two tons of fibre. This latter, since Kaempfer's time, has been known to be extensively used for ropes and cordage in Japan. Our rich and warmest forest valleys seem best adapted for the Ramee, as occasional irrigation can be also there applied. In the open grounds of Victoria it suffers from the night frosts, although this does not materially injure the plant, which sends up fresh shoots, fit for fibre, during the hot season. The plant has been cultivated and distributed since 1854, in the Botanic Garden of Melbourne, where it is readily propagated from cuttings, the seeds ripening rarely there. Cordage of this Boehmeria is three times as strong as that of hemp. Other species require to be tested, among them the one which was recently discovered in Lord Home's Island, namely, Boehmeria calophleba.

Boronia megastigma, *Nees.*—In West Australia on margins of swamps. This remarkable bush is recorded here as an emblem of mourning, its external blackish flowers rendering it especially eligible for graves. Industrially it interests us on account of its powerfully fragrant blossoms, for the sake of which this bush will deserve to be cultivated. The scent might be extracted by Mr. Bosisto's process.

Borrago officinalis, *L.*—South Europe, Orient. An annual herb, occasionally used for medicinal purposes or as an admixture to salad.

Brabejum stellatifolium, *L.*—South Africa. The nuts of this shrub are edible, resembling those of our Macadamia ternifolia, to which also in foliage and flowers Brabejum is closely allied. The nuts are also similar to those of the Chilian Guevina Avellana.

Brassica alba, *Visiani.*—(Sinapis alba, *L.*)—White Mustard. Europe, North Africa, North and Middle Asia. An annual. The seeds are less pungent than those of the Black Mustard, but used in a similar manner. The young leaves of both are useful as a culinary and antiscorbutic salad. Dr. Masters enumerates Brassica Chinensis, B. dichotoma, B. Pekinensis, B. ramosa and B. glauca among the Mustards, which undergo cultivation in various parts of Asia, either for the fixed oil of their seeds or for their herbage. From 15 lbs. to 20 lbs. of seeds of the White Mustard are required for an acre. In the climate of California, similar to ours, 1,400 lbs. of seeds have been gathered from an acre.

Brassica nigra, *Koch.* (Sinapis nigra, *L.*)—The Black Mustard. Europe, North Africa, Middle Asia. An annual.

The seeds, simply crushed and then sifted, constitute the Mustard of commerce. For medicinal purposes seeds of this species are preferable for sinapisms and other purposes. In rich soil this plant is very prolific; and in our forest-valleys it is likely to remain free from the attack of aphis. Chemical constituents: A peculiar fixed oil, crystalline sinapin, the fatty sinapisin, myron-acid and myrosin.

Brassica oleracea, *L.*—An annual or biennial coast plant, indigenous to various parts of Europe. It is mentioned here, with a view of showing that it might be naturalized on our rocky and sandy sea-shores. From the wild plant of the coast originated various kinds of Cabbages, Broccoli, Cauliflower, Brussels Sprouts, Kail, Kohlrabi, etc. Other races of this species are collectively represented by Brassica Rapa, *L.* (B. campestris, *L.*), the Wild Navew, yielding most of the varieties of Turnips, same with other cultivated forms transferred to us from ancient times. Again, other varieties are comprehended within Brassica Napus, *L.*, such as the Swedish and Teltower Turnips, while the Rape seed, so important for its oil (Colza), is also derived from a form of B. Napus. The Rape should be produced here as an agrarian produce, giving a rapid return, whenever it should remain free of aphis. The hardier turnips could be produced on our highest Alps, as they are grown still within the Arctic circle, and, according to Dr. J. Hooker, at a height of 15,000 feet in the Himalaya Mountains.

Butomus umbellatus, *L.*—The Flowering Rush. Europe, North and Middle Asia. This elegant perennial water-plant is mentioned here more for its value in embellishing our lakes and watercourses than for the sake of its roots. The latter, when roasted, are edible. The plant would live in our subalpine rivulets.

Bromus unioloides, *Humboldt.** (B. Schraderi, *Kunth.*) — Here called the Prairie Grass. From Central America it has spread over many parts of the globe. The writer saw it disseminated in the mountains of St. Vincent's Gulf as early as 1847. It is one of the richest of all grasses, grows continuously and spreads readily from seeds, particularly on fertile and somewhat humid soil, and has proved as a lasting and nutritious fodder-grass or pasture-grass one of our best acquisitions.

Broussonetia papyrifera, *Ventenat.* — The Paper Mulbery. Islands of the Pacific Ocean, China, Japan, perhaps only truly indigenous in the last-named country. The bast of this tree or shrub can be converted into very strong paper. It can also be used as a textile fabric; furthermore, the fabrics made from it can be dressed with linseed oil for waterproof coverings. In cultivation the plant is kept like an osier. The leaves can not be used for silkworms. European fabrics have largely superseded the clothing made of this plant in the South Sea Islands.

Caesalpinia Gilliesii, *Wallich.* (Poinciana Gilliesii, *Hooker.*) — La Plata States. This beautiful hardy bush can be utilized for hedges.

Cajanus Indicus, *Candolle.*—The Catjang; in Assam, called Gelooa-mah. A shrubby plant of India, probably available for profitable culture and naturalization in the warmer parts of our Colony. It sustains itself on dry ground, and yields the pulse known as Dhal, Urhur and Congo-pea. The plant lasts for about three years. Several species of Cajanus of the Atylosia section, indigenous to the warmer parts of Australia, might be tested here for the sake of the economic value of their seeds. The in-

sect, active in the formation of lac, lives extensively on the Cajanus, according to Mr. T. D. Brewster, of Assam. Silkworms live also on it.

PRUNING DECIDUOUS FLOWERING SHRUBS.

BY E. L. REIMER.

From time to time we are assailed with grievous complaints from persons possessing residences and private gardens in San Francisco and the vicinity, that deciduous shrubs will not flower; and they are now very generally looked upon as so much rubbish by those of our community who are in the habit of purchasing ornamental trees, shrubs and plants.

If a nurseryman offers for sale to his customers such shrubs as Lilacs, Snowballs, Philadelphus, Deutzias, etc., they will tell him that they are of no earthly use, as they will never produce any flowers in this country; and nothing will induce them to purchase one of these shrubs, unless they see it in bloom in the nursery, and even then, in a year or so after, they will return, grumbling to the seller that they have been deceived, because they have not again seen it in bloom.

Years since I used to sell a quantity of deciduous flowering shrubs, but the sale of them has gradually diminished from year to year; and I believe that every nurseryman will say the same.

I must here remark that this family of very interesting plants or shrubs will bloom in this country just as profusely as in any other. It is not the fault of the climate that our friends are disappointed, but of the jobbing gardeners who pretend to attend to private places. I will not say that all are equally ignorant and pretentious; on the contrary, we have some really well experienced and reliable men amongst them; but the great majority know but very little about gardening, and previously to their intruding themselves on the public in this part of the world as horticultural experts, have occupied no higher grade in the profession than experience in the use of the broom, the manure-fork and the wheelbarrow would entitle them to; indeed, to this work would they be rigidly restricted in the East and in Europe, if we except that in very busy times they might be permitted to dig a few potatoes, etc.

Some time since, I made it an especial point to make tours of observation around the city and suburbs, for the purpose of ascertaining for myself the cause of the before-mentioned complaints. To my great astonishment, I found that in every garden wherever there were Lilacs, Snowballs, and similar deciduous shrubs, they had all been *trimmed down to a uniform shape*, and that too in *the months of January and February!* Here, then, was the reason why the Lilacs and Snowballs did not bloom, and a most substantial one, too.

One of these men gets a job to clean up and bring the garden into good trim. He sets to work, hacking away at every tree and shrub which he sees in the place, little thinking and never caring that he is doing a vast deal more damage than good; his aim is to reduce every tree, plant and shrub to his idea of beauty of form. He shows no mercy to the Lilac-bush, profusely loaded on *the ends* of its last year's shoots, with its purple buds of promise, each pregnant with a glorious thyrsus of flowers, and which, if only let alone for a few more months, would have presented a magnificent appearance, with its profusion of bloom, and have equally delighted with its exquisite fragrance.

Alas! this tree, with others of like character, which would have been the pride for a time of the neatly-kept garden, until other beauties could follow, is rudely trimmed into sugar-loaf form, and when May arrives is freshly clothed in new green foliage; but the lady of the house looks in vain for the flowers, although the gardener has confidently assured her that her shrubs would certainly bear flowers in the spring; he really not knowing that he had mercilessly shorn the shrubs of *all* their flowering buds, and cast them on the rubbish-heap, and that renewal was entirely out of the question until the next season. Thus, the proprietor becomes disgusted with the shrubbery, and it is cast out of the premises, discarded as worse than useless.

However, this state of affairs is rapidly passing away. We have some very good jobbing gardeners around San Francisco, and any one needing the services of one, can hear of such of any of our reliable nurserymen, who certainly will not recommend one of the incompetents, although I will admit that there are very many of them about the city who are unfit even to do farm work.

Snowballs, Lilacs, Spireas, etc., should neither be pruned in the spring nor in the winter season. They make their new wood in June, and after that growth they set their flower-buds on the *ends* of nearly every young shoot. In the fall, they shed their foliage, and the buds then commence gradually to swell in our mild climate; they remain longer dormant in a country where there is snow and frost. An experienced eye will always discern the difference between a leaf and a flower-bud. Whatever trimming is needed should be done immediately after the flowering, and they should only be *thinned out* during the winter months. If this rule is followed out, the reward to the cultivator will be a rich crop of beautiful flowers.

HYACINTHS IN SPONGE.

Charles Reese, of Enderby, Maryland, gives the *Country Gentleman* the results of an experiment which he made last December, in growing Hyacinths in *sponge*. Remembering the slow growth of the bulbs in glasses, often not coming into bloom until near spring, he pondered whether there is not some substance in the great laboratory of nature more closely resembling the soft, warm bosom of the earth, than the hard, cold glass. The sponge suggested itself to his mind as possessing just the qualities required—"Soft, warm, and yielding; power of capillary attraction perfect; porous, admitting freely the fruitful atmosphere through a thousand tiny apertures; a powerful absorbent and evaporator of moisture; and besides all this, an animal substance, and doubtless filled with nitrogenous matters, which, after dissolving in water, will act as fertilizers to plants, or if they be not there in sufficient quantities, they may be placed in the water with the same result as liquid manure."

He took a large sponge, made incisions about an inch deep, and two long, inserted bulbs in them, put the sponge filled with bulbs in the top of a large vase, and filled the vase by pouring water through the sponge until about one-half the sponge is below the water. The water was slightly warmed, and being kept in a warm room, was not allowed to become cold.

"In two or three days the bulbs began to shoot their bright green spires upward, giving promises of success, and in two or three weeks they were five or six inches high. About this

time, in order to hide the unsightly appearance of the sponge, I scattered a few thimblesful of rape seed over the surface, between the bulbs, which sprang up almost immediately, and covered it entirely with a fine moss-like mantle, adding greatly to the beauty of the experiment.

"Desiring to give the knowledge and usefulness of the discovery and the enjoyment of its beauty, I now had it taken to my store in town, where it soon became an object of interest to great numbers of ladies, who watched its progress almost daily, until the bright flowers, more radiant than 'Solomon in all his glory,' unfolded their shining petals, filling the air with fragrance, and astonishing every one with their unusually large size and perfect form.

"The experiment was pronounced a complete success."

Mr. Reese does not say just how long after planting they first began to bloom, but probably within a few weeks. We would advise every lady reader to try this cheap and simple experiment.

Value of Straw for Feed.—It has been calculated by actual analysis that twenty pounds of straw and four pounds of wheat bran contain as much nutriment as twenty pounds of good hay. The only difference, if there is any, is in the digestion of the food, which is about equal when the straw is chopped and wetted for a short time and the bran mixed with it. When hay is very cheap, straw can be saved by carefully stacking through a series of years. It is most valuable, of course, when hay is high and grain is cheap; then, by feeding grain, which is richer than hay, with straw, which is poorer, we can supply a food which combines all the requisites to animal heat and growth.

ON THE PHOSPHORESCENT LIGHT OBSERVED ON SEVERAL PLANTS.

BY DR. H. BEHR.

For several years past, on various occasions, some friends and myself have observed a sheen of white phosphorescent light on the cymoid-inflorescence of *Ozothamnus sp.*, an Australian everlasting of arborescent growth. In daytime, the cymoid-inflorescence is of a rather dull milky-white; on dark still nights, not on every night, the same inflorescence emits a peculiar pale light, that makes it distinctly visible when everything else is enveloped in darkness. This light very much resembles that emitted by decaying wood, but is of a different origin; evidently being produced by some vital or physiological, not by a chemical process of decomposition.

Only once I have witnessed a similar phosphorescence in a living plant. It was on a patch of the *Schistostega osmundacea*, a little moss well known by this peculiarity to the guides in the Hartz Mountain. It was in a wild recess of the Bodethal, that even in daytime looks more like a Mexican barranca than a tame German valley, where it was shown to me on a dark night, shedding its pale spectral light in isolated patches on the rocky wall which towered to our right.

If the light exhibited by some Mucedines and Boleti is of the same origin, or if it is a product of a peculiar decomposition, I am not able to discuss. It may be that all these processes are of the same nature as the light of Scolopendia electrica, and many marine animals.

The phenomena which I am about to mention, I have not witnessed myself. I enumerate them as they are reported, but think that one part of them is of a

different origin; another merely based on optical illusion.

1. *Dictamnus albus.*—Several observers coincide in the description of this light, comparing it to electric sparks, under favorable circumstances enveloping the whole inflorescence of the plant. The Himalaya species of Dictamnus is said to possess this peculiarity in a considerably higher degree, so that on dark nights the bases of forest trees are lighted up by the shining sparks of an apparently burning bush.

In these cases it is evidently the ætheric oil contained in the glands that cover the whole spike of the inflorescence. The exhalation of this inflammable substance surrounds the plant, gets lighted by unknown causes, and burns away without in the least injuring the flowering stem whence it was produced. The authors who describe the phenomena state, at the same time, that by approaching a light to the flowers, the phenomena may be sometimes produced on nights when nature herself did not light up the flowers.

Professor Schlechbendal, at Halle, described to me the sparks as resembling those produced by approaching a piece of orange peel, bent between the fingers so that the ætheric oil squirts out, to the flame of a burning candle.

2. *Calendula officinalis* (Transactions of the British Association, etc., 1843), which, however, has not been observed again. The light produced by the radial flowers of this syngenesist seems to be analogous to that of the Prothamnus and Schistostega.

3. *Tropæolum major*, the light being first observed by Linne's daughter.

4. *Papaver orientale*, observed by Gœthe. Gœthe describes the phenomenon as a bluish reflection irradiating from the flower, and reproducing the form of the same. He considers it an optical illusion—the nerve of the eye, irritated by the intense scarlet of the flower, producing the same form in the supplementary color, a greenish blue. He mentions the analogous optical illusion produced by looking at the sun, when a number of circles of the supplementary color will immediately appear, even when the eye is shut.

I have here enumerated all the cases of light produced by living plants. I have also stated my own observations, and have collected as much as I can those of others. It is evident the material is very scarce, and a collection of facts in regard to such an interesting subject is most desirable. So I invite everybody who has the good fortune to witness a phenomenon of this kind to study it carefully; and, most of all, to communicate to other horticulturists, so that no observation that may tend to throw light on the subject may be lost to science.

Restoring Faded Flowers.—Place the flower in a small empty tea-cup or scent-bottle. Half fill a saucer with water, in the centre of which place the cup or bottle containing the flower, over which invert a tumbler the top of which rests in the water, covering the flower in the cup and excluding the air. The effect is surprising; in a short time the faded flower will revive, the color return into the petals, which quickly expand, and the scent returns as powerfully as when the flower is first plucked. Care should be taken that the flower does not come in contact with the sides or bottom of the inverted tumbler. I have supplied a method, the surprising efficacy of which any one can prove. A wiser head than mine can perhaps supply me with the cause of this effect.—*Flora, in London Field.*

PLAIN DIRECTIONS FOR COLLECTING ALGÆ.

BY DANIEL C. EATON,
Professor of Botany in Yale College.

The following notes are printed for the use of those persons in any part of the American continent who are willing to help the cause of natural history by making collections of sea-weeds and sea-mosses, but are as yet uninformed as to the modes of collecting and preparing their specimens.

Of Where, When, and How to Collect.—After a heavy gale blowing on the coast, almost any beach of sea, gulf or bay, will be covered with algæ, often in great quantities, coarse and fine, black, red and green, in entangled masses. Such heaps should be carefully examined as soon as possible after their formation, or else the more delicate kinds will be quickly destroyed by decay.

At extreme low water, the sea will leave tide-pools among rocks, or sometimes in the sand, and by wading in these pools many sorts may be obtained. The rock-pools with clear water and some shade from the rocks will generally yield the finest specimens. Old buoys, piles, wrecks, etc., afford good resting-places for sea-weeds. In quiet weather, a small dredge worked from a boat, in water from one to fifteen fathoms deep, will often bring up varieties not to be obtained in any other way. A strong fishing-line with coarse hooks will bring them up from the bottom also. A seine left a day or two in the sea, as a pound-net, for instance, will catch many algæ which were floating in the water.

The collector ought always to have a light hand-net—a bag of mosquito-netting stretched on a brass-hoop of 8 or 10 inches diameter, and secured to a good six-foot staff, is very convenient — a light basket containing several quart or pint preserve-jars, a few smaller wide-mouth jars, and perhaps a pair of brass forceps and a pocket magnifier.

The coarser sorts may be put in the basket, and the finer ones in the jars, keeping the latter filled with clear sea-water. It is well to wash each specimen clean when first obtained, so that the collection taken home may be in good order. Very rare or delicate specimens should be put separately into the smaller bottles. Care should be taken to get the *whole* plant, if not too large; and if it be very large, to cut out for preservation the root or "holdfast," and portions of the stem and other parts of the plant.

The most careful collectors will note also the kind of place where the plant was obtained, whether on rocks, piles, floating, or growing on coarser varieties.

Of Preserving the Coarser Sorts.—These should be shaken a little, loosened or spread out a little, but never washed in fresh water, and then dried in the air. The best way is to stretch a cord in some windy, and if convenient *shady*, place, and to hang the specimens on the cord. The flat-leaved forms, however, dry to best advantage if spread out on coarse papers and laid on a board. They should be protected from the dew at night, or brought under cover. In this way, a day or two will dry almost any sea-weeds, and, as the salt remains in them, they will keep for years, and may be easily soaked out and mounted on paper at any time. This rough-dried collection should be packed in boxes, and if the specimens pack too closely, twigs may be placed among them; if not closely enough, a slight sprinkling will make them so pliable as to pack nicely. Such sea-weeds, however unsightly they may be in this condition, may eventually be made into

excellent specimens. Corallines and other stony algæ may be wrapped up in paper, and will keep so indefinitely.

Of Mounting the More Delicate Sorts on Paper.—Dr. Harvey has so well described this process, that the following description of it is taken from one of his works on algæ. "The collector should have at hand a couple of large flat white dishes, filled with [fresh] water, in one of which the specimens may be washed, pruned and freed from parasites, and singly introduced into the other when sufficiently cleaned. When the specimen is floated in the second dish, a piece of white paper of proportionate size is to be introduced under it, the branches finely displayed with a pointed instrument, a porcupine's quill or a small forceps, and the superfluous parts removed. The paper, with the specimen so displayed upon it, is then to be carefully withdrawn from the water, placed between two sheets of soft paper, and subjected to pressure, like other plants. Thin calico [white muslin] rags are useful to lay immediately over the specimens, between them and the soaking paper, as the cloth is less likely to adhere to their surface than paper, and if it does adhere, is more readily removed without injury. After the first six hours, and again once every day till the specimens are fully dry, the wet paper must be changed, and then it will be found, in most cases, that the specimen has adhered to the white paper on which it was displayed. The smaller kinds will be sufficiently dry in forty-eight hours. A very little practice will make the process easy, and the trouble will be repaid by the beauty and interest of the collections which will soon be formed." To the above it may be added, that the firmer red varieties will improve in color for several hours steeping in fresh water, but many of the most delicate must be mounted from salt water only, else the color, and sometimes even the structure of the plant will be destroyed. The best as well as the cheapest kind of press is two good pine boards, about twelve by eighteen inches, and half a dozen bricks separately tied up in wrapping paper. Too great a pressure leaves a print of the cloth on the specimen, and renders it also more difficult to revive a fragment for microscopic examination.

For ladies' albums, algæ are often mounted on fine Bristol board or large wedding cards, and some beautiful specimens are pressed between layers of white flannel—half cotton is best—without the use of either muslin rags or soaking paper.

A solution of one part crystalized carbolic acid, ten parts pure glycerine, and forty parts water, will preserve algæ a long time, and such specimens are even better for study with the microscope than specimens on paper.

It remains only to add that the writer of these notes will receive with thanks any collections, large or small, from all parts of the world, and will endeavor to name all American specimens sent to him, if so desired.

New Haven, Conn., Nov., 1872.

A report comes from Cuba that a sugar-planter there has doubled the value of his estate by the use of a steam-plow introduced in 1868. What was formerly almost an impervious tract, the effect partly of nature and partly of inefficient cultivation, has been reduced to a porous soil. Two thousand acres of strong clay intermixed with stones of all sizes, and resting for the most part on a stone bottom, are now in fine tilth to an average depth of eighteen inches.—*Exchange.*

CULTURE OF HOUSE-PLANTS.

BY F. A. MILLER.

"What plants can I cultivate in the house," is a question which I have had to answer very frequently, and scarcely have I completed my suggestions, when I am told that this or that plant has been treated with a great deal of care, but has failed to thrive.

There are only a certain class of plants which can be expected to thrive well in the house, and there are certain rules which necessarily must be observed in cultivating them, or disappointment must follow. In many cases I have found, also, that too much is expected of a plant, in the way of growing and flowering.

From my own observations and experience, I can strongly recommend the following flowering plants, as the best adapted for the house, or to use a more fashionable term, window gardening:

Primula sinensis (Chinese Primrose), of which very excellent varieties can now be obtained in our floral establishments, is one of the most charming flowering plants under cultivation. It will flower spontaneously from six to nine months in the year, and, if transplanted in good time, will flower well all the year round. Its foliage is always very ornamental. The colors are pure white, delicate pink, red, violet and striped; single and double. During the winter months, when they flower most profusely, they should be placed in a warm and sunny position; and watered, perhaps, once a week moderately. The soil should be porous and always moist, but never wet. When the flowers begin to fade, they should be removed, in order to throw all the strength of the plant into the new flowers, which will make their appearance every day or two. After the plant has produced flowers in profusion for two or three months, a little nourishment may be given, in the form of liquid guano once a week, or by liquid horse-manure at intervals, or, indeed, any other fertilizing material. However, I have seen Primroses doing well for one year without any of these stimulants. Under very ordinary treatment, they will do exceedingly well. I would recommend for a small collection one red, one white and one fern-leaved variety. The double Primrose is of the most pleasing character, the flowers lasting a long time, and they are produced well above the foliage; the habit of the plant leaves nothing to wish for. The double variety, however, is as yet exceedingly rare with us, in California, and is not offered for sale by our florists; another year or two, however, will make plants of it more plentiful.

The *Cyclamen* is another of the charming house-plants, which hardly ever fails to produce graceful little nodding flowers upon each stalk, which it sends forth in profusion. The Cyclamen is one of my favorites. From seed sown in the spring of 1872, I had fine flowering plants in the month of December. The flowers are of various shades, from pure white to a rich purple, some being white with purple centre, others white-blotched and dotted with purple. Under ordinary treatment, Cyclamens will flower here very profusely from December to May. The Cyclamen is a bulbous plant, and, like other bulbs, should have a season of rest, when its leaves should be allowed to drop off for want of water, which should be given only just enough to keep the bulb from shriveling. This resting-time may be extended from June to November, when, by a more liberal supply of water, it will again begin to assume its activity. During the

time of rest its place may be supplied by some other plant. The Cyclamen should be kept moderately moist, a little less so than the Primrose; it prefers partial shade, and may be overshadowed, to some extent, by other plants. For a small collection I would recommend one white and one purple flowering Cyclamen. Our florists have a limited supply of them on hand.

Before enumerating any more plants for the house, I would like to say a few words in regard to the room in which it is intended to cultivate these plants. There are three conditions necessary for the successful growing of plants: warmth, air and moisture; of these, some plants require more, others less, but to some degree they must have a liberal supply of all these agents. There seems to be less difficulty in supplying warmth and air, than in affording the requisite amount of moisture; which, in some cases, is supplied insufficiently, but in most cases too abundantly, and particularly so during our winter months. While some plants are satisfied with moisture applied to their roots, we find that others can not exist without a certain amount of moisture in the atmosphere. In the rooms of our cottages or residences, we can not supply a moist atmosphere, and, therefore, we can not cultivate plants there which are in need of this peculiar agent. Yet we may take plants once a week out of the room, and give them a good showering with the watering-pot, which washes off the dust, and supplies to a small degree that moisture, which the atmosphere of the room lacks.

[To be continued.]

Loreto oranges have made their appearance in our market, and are sold at one dollar per dozen.

FERNS, AND FERN CULTURE.

A correspondent writes us for some information concerning ferns, and says, "Mention a few of the best from Fiji." We must inform our respected correspondent that to mention anything like a list of the best varieties found in the Fijis would take not only some time, but considerable space. When we state that the collectors for the Royal Society investigated and collected over 500 species in those numerous islands, he will at once see that it is a somewhat formidable task. However, amongst others that struck ourselves as particularly charming were Todea Wilkesiana; this was named by Mr. Brackenbridge in compliment to Commodore Wilkes. It usually grows not more than three feet or four feet high, and hence has been described as the "little-tree fern;" at the same time specimens of it have been known to attain seven feet, and exhibit a number of crowns. The stem is slender, and the fronds bipinnate, some two ft. in length, having the ultimate pinnules thin; it is not, however, so finely cut as Todea Hymenophylloides. Another very distinct and handsome Fijian fern of singular appearance is Diclidopteris augustissima; this usually grows upon the Tahitian chesnut epiphytically. It has narrow thin, grass-like fronds, varying from one ft. to six inches in length, very handsome. Davallia Fejensis is a species with highly decompound fronds, one ft. in height, and having extremely narrow segments. A species of Hemonites, H. lanceolata, and Syngramme pinnata are very handsome, particularly when seen as old plants. Three fine species of Cibotium, one of which has the stipes densely clothed with beautiful golden silken moniliform hairs; in fact, these hairs are so abundant that they have been collected as an article

of commerce, and used for stuffing cushions, etc. A handsome creeping species is Polypodium pellucidum.

Amongst New Zealand ferns worthy of particular notice is the beautiful Loxsoma Cunninghamii, which was discovered on the Keri-Keri River, Bay of Islands. This fern has broad, triangular decompound fronds, two ft. to three ft. high, glaucous, with sori intermediate, in character between Trichomanes and Davallia; also the very beautiful and distinct Todea superba.

To cultivate ferns successfully a knowledge of the conditions under which they grow in their native haunts is really necessary, and by imitating those conditions as far as practicable, the greater will be the success eventually attained. Irregular surfaces are, as a rule, the best adapted, whether natural or artificially formed, many ferns being truly rock plants, and therefore highly suitable for rockery cultivation. By judicious arrangements from ordinary level positions, their delicate hue and elegant form of outline can be seen to much greater advantage, the upper surface of their fronds being generally presented to the eye more fully. In planting ferns great consideration should be given to secure a site having a sufficient amount of shade and moisture. A south aspect, if possible, should be secured. In this climate we have found a sunk and shady tea-tree house highly suitable, erected sufficiently high for tree ferns; in such situations the plants are less exposed to the action of climatic vicissitude. Considerable taste may be displayed in arranging such rustic houses for fern culture, such as miniature valleys, with undulating surfaces gradually rising on either side. The soil best suited to the whole group is good fibrous peat, rough and full of vegetable matter, which should not, on any account, be sifted; abundance of sand can, however, be well mixed with it.

The style of arrangement having been decided upon, the next question is to place the plants in their permanent positions satisfactorily, for it is very essential to provide positions for each individual plant so that there is no injurious interference with its neighbor either by root or foliage. Different species of Lycopodium should be freely used for filling up, being, as they are, terrestrial and epiphytal, hanging from boughs like various cords. The magnificent Selaginella lævigata quickly climbs and becomes a lovely object; numbers of others are also very charming, having extremely delicate tissues, and delighting in deep shade.

In forming rock-work, or similar material for a rustic mass, over which ferns are intended to grow, it is always advisable to select, if possible, rock or stone of a porous consistence, and with rough and ragged surfaces. It is quite unnecessary to be particular in the selection of stone of handsome appearance or fine color, because if the ferns are intended to flourish and properly thrive, the material, of what nature soever, will become speedily obscured by luxuriant growth; therefore, even old brick work, or conglomerated burnt glass bottles, answer well, the glass for the bottom, and the old brick work for the upper part, which is valuable in affording a moist surface for their tender rhizomes to cling to. After the plants have once become established, as few changes should take place as possible, every encouragement being given to their growth, so that a decorative effect may be secured as quickly as possible.

It is advisable, and at the same time adds considerably to the effect, to plant

along the edges and on the stone projections such plants as sedums, saxifragas, sempervivums, iberis, Alysum saxatile, Arabis alpina, and others of similar nature and habit. It is always beneficial to choose the vicinity of water if any exists, and if not, an artificial piece of some kind should be improvised if possible; this being secured, a number of subaquatic and bog plants, also water lilies, etc., may be grown to perfection. If the space at command is extensive, interesting clumps, or a glen, may be formed by the judicious introduction of plants conspicuous for their large and beautifully-marked foliage.

The adaptability and suitability of ferns as hanging basket plants must not be overlooked. Nothing imparts more grace and elegance to rooms and fernerie s than well-managed hanging-baskets of ferns. During hot weather they impart a delightfully cool appearance, the greatest drawback being that they require frequent changes; the species having arching feathery fronds, make the best effect, and among suitable kinds, we name Aspidium exaltatum, Polypodium aureum, and Woodwardia radicans. The lower part of the basket should be covered with Lycopodiums. We do not recommend many of the handsome wire baskets in vogue, for this simple reason, that if the plants are well done, that is, successfully grown, the whole of the wire-work is covered, and hence of necessity hid, so that handsome wire-work is lost, and the expense quite unnecessary. Then again elaborate wire baskets are generally much more difficult to fill than plain ones. The bottom of the baskets should be lined with green moss, and two or three ferns planted therein according to size, Lycopodiums or some creeping or trailing plants round the edges to hang down carelessly, is all that is required for forming elegant and tasteful hanging baskets. A supply of these should be kept in the fernery, so that there are always some ready to change when required. With regard to watering: it is somewhat difficult to lay down any distinct rule regarding this operation; neither too dry nor too wet must be the standard. If kept too wet, the roots soon sodden, and if too dry, the plants quickly speak out by becoming rapidly a bad color. Their successful culture simply depends on proper soil, careful watering, placing in a quiet, moist atmosphere, keeping down the temperature in summer by shading, and avoiding as much as possible currents of dry, hot winds. Ferns are at times attacked with insect pests, the soft membraneous kinds being the most subject. As a rule, fumigation with tobacco is the best preventative and curative, for an occasional fumigation destroys the winged male insect of all the Coccos family. Syringing must be resorted to for mealy bug, and scale must be loosened by the use of a soft brush, and afterwards receive a syringing. With care and attention ferns may be grown very successfully in Victoria, and without any very great expense they will ever be a source of enjoyment, and the more attention and care are devoted to them, the greater will be the success and enjoyment derived therefrom.—*Melbourne Times.*

Eastern quail, which were turned loose on a farm near Cloverdale, have so multiplied that their notes are heard over the adjacent foothills. It is supposed there are 200 or 300 of them.

The corn crop this year is the largest ever gathered—a billion and a half of bushels.

PREPARING SKELETON LEAVES.

A correspondent of *Science Gossip*, referring to the tediousness of the ordinary way of preparing skeleton leaves, which taxes patience, and which most experimenters give up in despair before getting through with it, describes a new method, which is easy, cleanly, and takes but little time. It is as follows:

"First dissolve four ounces of common washing-soda in a quart of boiling water, then add two ounces of slacked quicklime, and boil for about fifteen minutes. Allow this solution to cool; afterward pour off all the liquor into a clean saucepan. When the solution is at boiling point, place the leaves carefully in the pan, and boil the whole together for an hour. Boiling water ought to be added occasionally, but sufficient only to replace that lost by evaporation. The epidermis and parenchyma of some leaves will more readily separate than others. A good test is to try the leaves after they have been gently boiling for about an hour, and if the cellular matter does not easily rub off betwixt the finger and thumb beneath cold water, boil them again for a short time. When the fleshy matter is found to be sufficiently softened, rub them separately but very gently beneath cold water, until the perfect skeleton is exposed. The skeletons at first are of a dirty white color; to make them of a pure white, and, therefore, more beautiful, all that is necessary is to bleach them in a weak solution of chloride of lime. I have found the best is a large teaspoonful of chloride of lime to a quart of water; if a few drops of vinegar are added to the bleaching solution, it is all the better, for then the free chloride is liberated. Do not allow them to remain too long in the bleaching liquor, or they will become too brittle, and can not afterward be handled without injury. About fifteen minutes is sufficient to make them white and clean-looking. Dry the specimens in white blotting paper, beneath a gentle pressure, after they are bleached.

"Simple leaves are the best for young beginners to experiment upon; the vine, poplar, beech, and ivy leaves make excellent skeletons. Care must be exercised in the selection of leaves, as well as the period of the year and the state of the atmosphere when the specimens are collected, otherwise failure will be the result. The best months to gather the specimens are July and August. Never collect specimens in damp weather; and none but perfectly matured leaves ought to be selected."

ARRANGING FLOWERS IN BEDS.—In arranging flowers in beds, the principal things to be avoided are: The placing of rose-colored or red flowers next to scarlet or orange, or orange next to yellow, blue next to violet, or rose next to violet. On the contrary, the following colors harmonize: white will relieve any color (but should not be placed next to yellow), orange with light blue, yellow with violet, dark blue with orange yellow, white with pink or rose, and lilac with yellow. By observing these rules the amateur may have his flower borders vie in beauty and arrangement with those of greater pretensions, and even surpass many of them. Nothing adds more to beautify home than a well arranged flower-bed of rare flowers.—*Southern Agriculturist.*

THE man who produces the largest area, cultivated with the least expense, and increases the fertility of his soil, is the most scientific farmer, however ignorant he may be of the fact.

Editorial Portfolio.

THE HORTICULTURIST.

In commencing a new volume, it appears consistent that we should address a few lines to our subscribers, intimating to them the course we shall endeavor to pursue, in providing material for our Magazine.

From our observations during several years of previous intercourse with many of the florists of the Pacific Coast, we have felt the necessity for collecting and condensing the experience of those who have made the occupations of Horticulture and Floriculture their specialties, and the more fully has this necessity been impressed upon us by the assurances of these experts, that so different are the habits of familiar plants to them, in the climates and soils of California, from their experience with them in other parts of the world, that only by careful observation have they recovered their control in the management of them.

To new arrivals, whether amateur or professional, these peculiarities are very embarrassing, and, if our labors shall result in the dissemination of useful information in the above delightful pursuits, we shall attain all we seek. Some of the most experienced and successful among our florists are cheerful contributors to this section.

Kindred to Floriculture is the science of Botany, and we have the cordial assurance of aid, in this department, from several of the most eminent botanists in the Pacific States—while in the departments of Arboriculture and Pomology, other able pens are associated with us.

Much interest is at the present time felt, both in the East and in Europe, regarding the Marine Botany of this coast, and we may here remark that our Marine Flora are so widely different from those of other coasts, that they add peculiar interest to the subject. And here, again, we are assured of efficient aid— and we anticipate making our Magazine the medium of exchange of observation on this very interesting study. We have also received the most cordial co-operation from several eminent Entomologists, whose observations, in connection with Horticulture, are esteemed of very great importance among practical men.

We have made arrangements for a series of descriptive chapters on the "Rural Homes of California," from the very able pen of Mrs. Professor Carr, illustrated by photographic pictures by Mr. C. E. Watkins; and had intended that the first essay, having for its subject the princely mansion, farm and ornamental grounds of the Hon. Thomas H. Selby, in San Mateo County, should have made its appearance in this, our first number of the third volume of our Magazine; but the unpropitious state of the weather, at the time when the artist should have operated, has necessitated us to withhold it until next month.

In the *Popular Science Monthly*, for the present month, we find a highly interesting article on "The Spontaneous Movements of Plants" by Alfred W. Bennett, M. A., well worthy of careful perusal, very scientific, curious and instructive. And also a more practical article on "the Cultivation of Wild Flowers," by Professor Samuel Lockwood, containing many useful suggestions. This is indeed a subject demanding especial attention from our California botanists, who are too frequently content with depositing dried specimens in their *hortus siccus*, instead of seeking to civilize their acquisitions, many of which are entirely new to the rest of the

world, and are eagerly sought after by European florists. We earnestly call the attention of our California friends to this study—and to all we say, help us with your observations; write to us to our P. O. box 2275, San Francisco, and, if any letter calls for an answer, we will do our best to give a satisfactory one.

REPEAL OF THE LATE OBNOXIOUS POSTAL LAW.

We are glad to announce that the late obnoxious ruling, relating to seed-packages, etc., has been abrogated, to take effect immediately, so that farmers and others, living remote from cities, can now once more obtain direct, by mail, such seeds as they may need, cuttings and small plants from nurserymen; and also seedlings, of those who make a specialty of growing deciduous and evergreen trees.

Gunpowder for Tent Caterpillars.—A correspondent at New Hamburgh, Duchess County, writes us that he keeps his apple-orchard clear of tent caterpillars by shooting into their nests with loose powder. The gun—any sort of smooth-bore will do—is to be held within a foot of the nest, and the charge of powder to be used without a wad or any ramming down. He claims that it is better than burning with a swab and kerosene, because it does not injure the tree, and is most expeditious, and more effectual. In most cases not a trace of worms or nest is left. He goes over his trees each spring and fall, and a couple of hours are sufficient for several hundred trees. Boys enjoy work of this kind, but to catch worms by hand, or to burn, or twist them out, and then stamp them, is disagreeable labor.—*Country Gentleman.*

AN ADDRESS BY THE UNITED STATES CENTENNIAL COMMISSION.

To the People of the United States:

The Congress of the United States has enacted that the completion of the One Hundredth Year of American Independence shall be celebrated by an International Exhibition of the Arts, Manufactures, and Products of the Soil and Mine, to be held at Philadelphia, in 1876, and has appointed a Commission, consisting of representatives from each State and Territory, to conduct the celebration.

Originating under the auspices of the National Legislature, controlled by a National Commission, and designed as it is to "Commemorate the first century of our existence, by an Exhibition of the Natural Resources of the Country and their development, and of our progress in those Arts which benefit mankind, in comparison with those of older nations," it is to the people at large that the Commission look for the aid which is necessary to make the Centennial Celebration the grandest anniversary the world has ever seen.

That the completion of the first century of our existence should be marked by some imposing demonstration is, we believe, the patriotic wish of the people of the whole country. The Congress of the United States has wisely decided that the Birth-day of the Great Republic can be most fittingly celebrated by the universal collection and display of all the trophies of its progress. It is designed to bring together, within a building covering fifty acres, not only the varied productions of our mines and soil, but types of all the intellectual triumphs of our citizens, specimens of everything that America can furnish, whether from the brains or the hands of her children, and thus make evident

to the world the advancement of which a self-governed people is capable.

In this "Celebration" all nations will be invited to participate; its character being International. Europe will display her arts and manufactures, India her curious fabrics, while the newly opened China and Japan will lay bare the treasures which for centuries their ingenious people have been perfecting. Each land will compete in generous rivalry for the palm of superior excellence.

To this grand gathering every zone will contribute its fruits and cereals. No mineral shall be wanting; for what the East lacks the West will supply. Under one roof will the South display in rich luxuriance her growing cotton, and the North in miniature the ceaseless machinery of her mills converting that cotton into cloth. Each section of the globe will send its best offerings to this exhibition, and each State of the Union, as a member of one united body politic, will show to her sister States and to the world how much she can add to the greatness of the nation of which she is a harmonious part.

To make the Centennial Celebration such a success as the patriotism and the pride of every American demands, will require the co-operation of the people of the whole country. The United States Centennial Commission has received no Government aid, such as England extended to her World's Fair, and France to her Universal Exposition, yet the labor and responsibility imposed upon the Commission is as great as in either of those undertakings. It is estimated that ten millions of dollars will be required, and this sum Congress has provided shall be raised by stock subscription, and that the people shall have the opportunity of subscribing in proportion to the population of their respective States and Territories.

The Commission looks to the unfailing patriotism of the people of every section, to see that each contributes its share to the expenses, and receives its share of the benefits of an enterprise in which all are so deeply interested. It would further earnestly urge the formation in each State and Territory of a centennial organization, which shall in time see that county associations are formed, so that when the nations are gathered together in 1876, each Commonwealth can view with pride the contributions she has made to the national glory.

Confidently relying on the zeal and patriotism ever displayed by our people in every national undertaking, we pledge and prophesy, that the Centennial Celebration will worthily show how greatness, wealth and intelligence, can be fostered by such institutions as those which have for one hundred years blessed the people of the United States.

JOSEPH R. HAWLEY,
President.

LEWIS WALN SMITH,
Temporary Secretary.

COLLETIA BICTONENSIS.—This plant is highly commended in England as a hedge plant. It is said to have originated in the arboretum of the Baroness Rolle. Sir Wm. Hooker named it, and considered it a distinct species of a very useful and interesting order of plant. It is easily propagated by cuttings. It is proper to say, however, that the editor of the *Cottage Gardener* doubts if it can be used for hedge-making, if the statement of Sir William Hooker that it is not a hardy plant, be a true one. It is asserted that its leaves are very fleeting, and only to be seen on the very young branches and spires. The branch-

es are of pea-green color, arranged in a peculiar decussate manner, with sharp, hard, brownish-red spines at their ends; the petaloid floral covering is waxy-white, with a greenish, substantial looking base formed by the fleshy ring found at the bottom of the tube, and which is peculiar to the Colletias.—*Moore's Rural New Yorker.*

WOODWARD'S GARDENS.

We are pleased to notice that the Conservatories are receiving considerable accessions of valuable plants, and that a thorough renovation is in progress. The Marine Aquarium requires time and much skillful attention to get it into working order, but its ultimate success is undoubted, notwithstanding some delay. It will very shortly be thrown open for public inspection. Many curious specimens have already been obtained.

REPORTS OF SOCIETIES.

State Agricultural Society.—The Directors of the State Agricultural Society held a meeting at the office of the Secretary on Saturday evening, December 14th. It was resolved that the annual election for officers of the society should take place January 22d. Five proposals for the renting of Agricultural Park for three years were received, as follows: Dana Perkins offered $5,100 per year; D. D. Whitbeck, $4,200; Robert Allen, $4,800; H. Eldred, $3,300; A. A. Wood, $5,500. The lease was awarded to Wood. Sundry bills were audited, and the meeting adjourned.

It is said that a spoonful of sulphur to a ton of hay will prevent it from becoming musty in the stack or bale.

OUR EXCHANGE TABLE.

We have many excellent periodicals from time to time laid on our table, full of valuable information, and of far more general service than the majority of the trashy literature of the day. We will notice them as they present themselves, and will recommend them to the perusal of our readers. We have only space at the present time for the few following:

The *Gardener's Monthly*, edited by Thomas Meehan, published by Brinkloe & Marot, Philadelphia, Pa., $2 per annum; specially Horticultural and Floricultural.

The *Horticulturist*, a Journal of Rural Life, etc.—a monthly magazine—published by Henry S. Williams, New York. $2,50 per annum.

The *Overland Monthly*, published on the first of each month, by John H. Carmany & Co., 409 Washington Street, San Francisco, Cal. This is *the* California magazine.

The *Ladies' Floral Cabinet*, monthly, published by Henry S. Williams, of New York. 75 cents per annum—as good as it is cheap.

The *Gardener's Chronicle*, an excellent weekly journal, published by William Richards, 41 Wellington Street, W. C., London, England. $6 per annum.

The *California Farmer*, published by Warren & Co., San Francisco, Cal. $4 per annum.

Pacific Rural Press, by Dewey & Co., San Francisco. $4 per annum—an excellent publication.

Orange culture is extending in Louisiana, and it may and should be extended over all the low valleys and hills of California.

NOTICE OF BOOKS, ETC.

The *Overland Monthly*, for January, 1873. Thanks to the publishers, the first monthly part of the Tenth Volume of this ever-welcome periodical now lies before us. We have been tempted to devote more time than we at first intended, to look through it, and we have been well entertained. This number fully keeps up the prestige already established. The "Journey in a Junk," and the "Colorado Desert," are interesting. The "Etc." are piquant, and the items on "Current Literature" are liberal and enlightened. This is a magazine well worthy of support. Published by John H. Carmany & Co., 409 Washington Street, San Francisco.

The *Rural Alabamian*, a Southern magazine of Progressive Agriculture and Improved Industry; published by C. C. Langdon & Co., Mobile, Alabama, at $2 per annum. This appears to be an excellent agricultural work, and should be well patronized. It is not only replete with valuable information for the farmer and horticulturist, but also contains abundant useful instruction of a general character.

Colt's Illustrated and Family Magazine: Published by the Colt Publishing Company, New York and Albany. $2.50 per annum—a very readable magazine.

CATALOGUES, ETC.

It will give us great pleasure to notice the Catalogues of our friends, the nursery and seedsmen, if they will favor us by forwarding them to our P. O. box, 2275, San Francisco.

We were much pleased with the set of Catalogues from the nurseries of Messrs. E. G. Henderson & Sons, Wellington Road, St. John's Wood, London, N. W., England. They are very full and exhaustive, and contain many varieties which we should like to see particularized in the catalogues of our own nurserymen.

Also, from O. Barras, North Fairfield, Ohio, a useful general Catalogue.

FAVORS RECEIVED.

We have received the monthly report of the Commissioners of Agriculture, for November and December; it contains many valuable statistics and much other instructive and interesting matter.

From C. H. Green, Esq., Secretary National Agricultural Congress. The very able address of M. F. Maury, LL. D., on the Objects of, and the Benefits to be derived from, an International Conference to be held among the leading agriculturists and meteorologists of different countries.

NEW AND RARE PLANTS.

Callicarpa purpurea.--A shrub as yet but little known. It grows into a thick bush, about two or three feet high; the flowers are borne in the axils of the leaves; they are small and of a delicate pink color, numerous enough to be quite attractive; small berries about the size of small red currents appear after flowering, then change in September to a pearly violet color, and continue to attract attention *through the winter.*—*Gardeners' Monthly.*

Salvia Taraxacifolia is a native of the lower slopes of the Greater Atlas, and was discovered there by Mr. Balans in 1867.

It has been seen by Dr. Hooker growing in broad patches, along the base of the Great Atlas, Africa, presenting a

very beautiful appearance. The flower is of a pale pink.—*Botanical Magazine.*

Lachenalia tricolor.—*L. tricolor*, according to Mr. Baker's determination, is a very variable plant, including the following forms, *L. quadricolor*, *L. luteola*, Jacq.; and *L. aurea*, Lindl., of which the last is by far the most elegant, and is further remarkable for its bright color and the waxy texture of its flower.

It flowered in the Royal Gardens, Kew, England, in March of 1872, from bulbs.—*Botanical Magazine.*

New Ornamental Cherry.—A remarkable sport of the May Duke Cherry, has been produced in the grounds of M. Ferdinand Messunge, of Baillonville. The leaves become narrow at the end, so as to resemble those of the peach, or even the willow. Some are eight inches in length and one inch in width; others are four inches in length, and about the third of an inch in breadth.—*Belgique Horticole.*

Roman Hyacinths are among the newly imported plants, displayed in greenhouses. They are natives of France, are both white and blue, and very fragrant.

Homorphophallus papillosus.—The French gardeners are noticing a new bulbous plant thus named, which serves as an ornament in the greenhouses from April to September. The peculiarity of this plant is, that, after its brown spathe-like flower is blown, a leaf rises up and bends over it like a helmet, and seems to protect and cover it like an umbrella, which divides into bunches with numerous pinnated leaflets of a fine green color.—*Ladies' Floral Cabinet.*

Crocus Cilicius is a native of Asia Minor, and is called one of the prettiest of autumnal crocuses. In color it resembles *Speciosus*, with smaller flowers and narrower petals.

Walking Fern (*Camptosorus ryzophyllus.*)—This singular and interesting little Fern is found in rocky woods. It grows in the almost soilless niches of rocks, or gets a sufficient foothold on their naked inequalities. It is quite rare, and during several years my searches in the woods were unrewarded with a sight of its odd little leaves, till one day, ascending a low mountain in this town, in a quiet, mossy slope of gray rock, far above my head, a company of these little "Walkers" was discovered, though it was not till sometime after any leaves were found.

The frond is simple, reticulate veined in the midst, and forked only at the margin. It is undivided, lance-shaped, with heart-shaped lobes at the base, and the apex attenuated into a long, slender acumination, that often bends over backward and takes root, giving rise to a new plant. Thus, the fern takes one step a year. I never have seen one that had stepped twice.

The faint dots are variously shaped, and scattered without order on the transverse veins, slanting, and at various angles, often in pairs and facing each other, looking something "like writing;" hence its Greek name—*Antigramma rhysophylea* of Presl. It can be cultivated in the same manner as other wild ferns, always taking care to give it a soil and atmosphere as near like its native own as possible, remembering it needs little light, much water, and to be let alone.—*Vermont Cor., in Moore's Rural New Yorker.*

Curious Orchids.—Alfred Smee, in his interesting work, entitled "My Garden," describes and figures some curious species of orchis, among which is the Orchis mascula, or man orchis, so called, because the flower has a resemblance to a little man dangling from the plant, and is cultivated more as a

curiosity than for its beauty. The Bee Orchids are very beautiful, and grow with great luxuriance under proper management. A third less showy is the Fly Orchis. The best soil for these plants is a light turfy loam.

New Calycanthus.—A writer in the *Farmer and Gardener* states that he has a white flowering variety of the *Calycanthus florida*, or common Sweet Scented Shrub. He says: "I have had these plants under cultivation several years. They are decidedly more vigorous growers than the dark variety. The flowers, which are straw-colored, are also larger and more fragrant, and bloomed through the past dry summer until frost. I do not know that they will produce the same flowers from the seed, but why should they not do so when they have preserved their original characteristies, through surrounded by the dark flowering varieties, ever since they were first known here, more than thirty years ago." If the above is true, and we have no reason to doubt it, this new variety of an old and very popular shrub will certainly be a valuable acquisition to our gardens.

New Bedding Plant.—We have received from Henry E. Chitty, Superintendent of the Bellevue Nurseries, Patterson, N. J., a specimen of a new bedding plant known as *Salvia splendens alba compacta*—or, in plainer language, a white variety of the common Scarlet Sage. The plant is similar in habit to this species, the principal difference being in the color of the flowers. We think the lovers of choice bedding plants will hail this novelty as a great acquisition. —*Moore's Rural New Yorker.*

Carbolic soap and water is recommended to destroy mildew on roses, to be applied by sprinkling.

NEW FRUITS AND VEGETABLES.

White Apple Tomato.—In the "Rural Southland" we find a tomato mentioned as new, with this name. This is its first year of fruiting, and it is declared promising. Dr. Swasey says of it: "The plant is a hardy, vigorous, drought-defying grower, and a prolific and continuous bearer—equaling in all these respects the common red and yellow plum-tomato. The fruit is of a beautiful cream-white color, medium in size, of a regular, slightly oblate, apple-shape, with a smooth, tender skin, and a flesh at once so almost melting in texture, so deliciously fruity in flavor, so devoid of that rank tomato twang that most people are not particularly partial to, so solid and so rich, that one will have to look long and wide before finding another variety that will so completely come up to the highest standard of a first-class table tomato. As a Southerner we are proud of it, because it is said to be a Southern variety—and were it not, we should esteem it as we do now, the best salad tomato in cultivation."—*California Farmer.*

WORK FOR THE MONTH.

BY F. A. MILLER.

Rain has been plentiful all over the State, and the work of sowing, planting, and preparing the fields and gardens, should not now be delayed.

Our nurserymen and florists are prepared to furnish a fine assortment of trees and shrubs, both useful and ornamental; prices are moderate, and there is abundance of room for every tree and plant, which is offered for sale. The rains having commenced rather late this season, the best time for planting is rapidly passing away, and I would urge all who wish to make improve-

ments in their grounds, to do so promptly. The California climate requires early planting.

To those who have gardens, I would suggest a general overhauling. In the first place, have all your trees and shrubs properly trimmed and pruned. Your evergreen-trees and shrubs need it, to give them a good form; your roses need it, to produce new wood and an abundance of fine flowers; after trimming, secure them well to their stakes, to protect them against our heavy winds; when all this is done, I would further suggest the application of some good old horse-manure, by spreading it over the ground, and then your gardener may go to work and trench the ground well with a spade, taking care that all weeds and the manure is well worked in below the surface.

For lawns, I would recommend a top-dressing of fresh or old manure, which should be allowed to remain upon the surface for a few weeks, in order that the rain may carry the nutritive particles into the sod, after which the remainder may be raked off. Most of our city lawns consists of made ground, which is soon exhausted, and, unless a fertilizing process is adopted, the grass can not be expected to grow uniform and thrifty.

The planting of Hyacinths, Tulips, Pæonies, Lilies, Crown Imperials, Lilies of the Valley, Amaryllis, Anemoues, Ranunculus, etc., should now be commenced. Plant, (after thoroughly preparing the soil,) in a warm and moderately dry situation; a well manured sandy loam suits them best. Pæonies may be planted in heavier soil, and they require less sun, and will bear more moisture.

The planting of seeds in the open ground should be delayed, although in this mild climate Mignonette, Pansies, Candytuft and the like, will germinate readily; but I have found that the planting of such seeds in February and March, is quite as good, and frequently much better. The ground at this time is cold and wet, and the seed is apt to lie dormant for many days, which often result in decay.

During the month of December, we had some unusually cold weather, which, in many localities, seriously injured Heliotropes, Fuchsias, Geraniums, and other soft-wooded plants. These, however, will come up again from the ground. Notwithstanding the cold weather, we notice in the northern part of the city Heliotropes, Fuchsias and Geraniums, and even Cinerarias, in full bloom in the open air.

In my garden, the following plants are now in bloom in the open ground: Verbenas, Ageratums, Stevia, Fuchsias, Heliotropes, Cinerarias, Ericas, Pansies, Pinks, Pentstemon, Cestrum, Geraniums, Polygala, Laurustinus, Myrtle, Canterbury Bell, Sollya, Roses (of which I would mention, Safrano, Daily White, Lyoniase, Hermosa, Model of Perfection, Pauline Lancezeur, Eliza Sauvage, La Sylphide, Mad. Bosanquet, etc.), Calceolaria (the shrubby variety), Solanum jasminoides, Veronica, Brugmansia, Diosma, and many others.

Greenhouses and conservatories, which are not artificially heated, have been affected by the cold and the following rainy weather. I do not provide for artificial heat, yet I have the following plants in bloom: Cyclamen, Camellia, Azalea, Primula sinensis, Torrenga, Daphne, Salvia, Jasmine, Cactus, Cineraria, Begonia, Hyacinths, Tuberoses, Hoyacarnosa, etc.

Plants in greenhouses should now be watered very moderately, and no shifting into larger pots should take place at this time. I find, that plants in com-

paratively small pots do best in winter. Give fresh air plentifully; during clear weather it may be given from nine o'clock in the morning until three o'clock in the afternoon, unless heavy winds prevail.

If your Coleus or Bigonias show rotten leaves, remove them at once.

Seeds of greenhouse plants should not be sown yet, unless bottom-heat can be given. All that should be done now is, to preserve the plants which are on hand; the propagating of any kind should be delayed until a more favorable time.

If it should be desirable to have early vegetables, Lettuce, Cabbage and Cauliflower seeds, may be sown in a frame. Peas may be planted now.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

That most excellent, healthy, and useful fruit—the Apple—is usually found in great abundance in our markets throughout the year. We obtain the early or summer apples from such warm situations as Pleasant Valley, Yolo County, sometimes as early as the months of April and May; one month later we have them from less warm localities around us, within twenty miles of the city; and, still later they are brought to us from further north, Oregon, etc. The same remarks will apply to our supplies of apples of the fall and winter varieties—though of the latter our warm, pushing climate allows but few compared with those of the eastern parts of the United States. The varieties which last with us the longest in winter are the Newtown Pippins, Spitzenbergs, Putnams, Golden Russets, Lady Apples, etc. The Newtown Pippin, no doubt, ranks highest for all general purposes on this coast, as it does in New York. When apples are required for preserves, they should be used before growing mealy—the most common fault of apples, if not of most other fruits, in this rapidly forcing clime. Among the largest apples is the kind called Gloria Mundi, but it is rather coarse, and insipid in flavor; they have been known to weigh three and a half pounds.

Of Pears: there are many varieties of this excellent fruit all the year, except in early spring and late in the winter. Among the choicest of winter pears are the Winter Nelis, Glout Morceau, Easter Beurré, Vicar of Winkfield (not Wakefield), Lawrence, and Beurré Clairgeau. They are now becoming pretty scarce in the markets, but are at the present time more abundant than usual at this season.

Oranges are fast becoming more plentiful, and lemons also. That delicious, wholesome, and nourishing Southern fruit—the Banana—refreshes the sight (it is rather too dear for the ordinary palate), in large, beautiful bunches, half yellow, and perhaps most frequently half green. They grow separately on a very stout twig or branch, in a spiral form, to the number of from twenty to sixty in a bunch. The red varieties are considered the best, though they seem to be much scarcer here. The Plantain is used for cooking only.

Grapes have nearly, if not altogether, disappeared. In the East, they seem to preserve the Catawba longer than we do ours; owing, probably, to their season being later. We have a great advantage over the East, in being able to grow all the luscious foreign grapes in perfection in the open air. There they have to use hot and cold graperies for these.

It seems to be of little or no avail to

suggest to our fruit-sellers to label every variety of fruit they have for sale. We have done so several times to no purpose. If they would take our hint, it would speedily educate the public as to the best kinds of all the fruits. It is worthy of remark that, notwithstanding the lavish liberality of many of our housekeepers, and their willingness to pay the largest prices for the best productions of our market, we find more fruits than ought to be offered for sale of an inferior quality. Surely, the 50 to 100 per cent. higher prices paid for the few superior cultivated and perfect fruits which are found and sold in our markets, should be an all-sufficient premium to induce the fruit-grower to devote his attention to procure the choicest varieties of the different sorts of fruit. We would instance among summer fruits that most delicious plum, "The genuine Green-gage," which is so little cultivated. And so with many other of the choicest and first-rate fruits.

The numerous varieties, both cultivated and wild, foreign and domestic, which are received here and sold in the markets, demonstrate the necessity, as well as the importance, of their being perfectly cultivated. We observe that the farmers of this State have lately formed a union for the better and fairer attention to their interests, as between buyers and sellers. Certainly, the fruit culturists should do the same thing, for they are too much in the power of the middle-men, or salesmen, in the cities and towns.

Fruit, in perfection, should be full sized, sound, ripe, fresh, and of the best kind; and when most plentiful, possess the best and highest flavor. They should be kept in cooler places than those in which they are usually stored, as this best preserves their highly valued juiciness.

Correspondence.

To the Editor of the California Horticulturist.

SIR:—I have just received from my friend, the Professor of Botany in the Sheffield Scientific School, Mr. D. C. Eaton, a copy of some notes which he has prepared for the guidance of those who wish to collect sea-weeds or algæ. Before leaving New Haven, Professor Eaton gave me a very beautiful series of the sea-weeds, which he has collected within the past few years, on the seaboard of New England. The collection includes fifty-five specimens, all of which are determined and marked with printed labels, indicating the localities. He will be glad to exchange specimens with collectors, if any there be, in this vicinity, and with the hope of promoting such exchanges, I intend to exhibit his collection in the Academy of Sciences, and deposit it in the University. It will give me pleasure to be the medium of exchange between any California collector and Professor Eaton.

Yours, respectfully,
D. C. GILMAN.

University of California,
Oakland, Cal., Dec. 26, 1872.

This collection has been inspected with much interest by an experienced collector of marine algæ, residing in this city. He will be pleased, at an early date, to exchange with Professor Eaton.

The notes, alluded to by Professor Gilman, will be found in another column of the present number of the Magazine.

We append a letter from our friend, Dr. C. A. Stivers, relating to the collection of algæ sent by Mr. Eaton.—ED.

To the Editor of the California Horticulturist.

DEAR SIR:—As a student of algæology, I have derived great pleasure from the examination of a small col-

lection of marine algæ, from the New England coast, prepared by Professor Eaton, of New Haven, and by him presented to Prof. D. C. Gilman, President of the University of California. It was through the kindness of the above-named gentleman, and of Mr. Carmany, that I was enabled to examine the collection, and compare it with my own of the Pacific Coast. Although not strictly in the line of your articles, I have still thought that a few words, respecting them, would not be out of place.

The collection embraces specimens from the three great classes of marine vegetation, and comprises some, which have not, as yet, been found on this coast. It is particularly rich in the *Rhodospermæ* (red weeds), such as the *Callithamnions*, whose tracery is more delicate than the finest lace, and with a color extremely brilliant. One specimen in particular, the *Daysa elegans*, is remarkable for its rich coloring. This weed has, I believe, never been found on this coast, though I have every reason to think that it has a habitat here.

The series is too small to make a comparison with those found here; but as a general thing, I think their colors are more brilliant, while their growth is less robust.

This collection is, I understand, to be deposited in the State University, and it is to be hoped that it will form the nucleus of a collection which shall embrace both the east and west coasts of North America.

The study of algæology may seem, to practical minds, of little value, and as having but little bearing upon the economic matters of life. Such is not the case. They play a most important part in the machinery of Nature; and, aside from their great beauty and interesting formation, are worthy objects for our consideration. Yours truly,

C. A. Stivers, M. D.

We hope to hear more of this interesting subject.—Ed.

Editorial Gleanings.

California Shad.—Those interested in the subject of fish culture will be pleased to know that the effort to stock our rivers with shad has attained the gratifying beginning of success. In June, 1871, the State Commissioner placed in the Upper Sacramento a large number of shad procured of Seth Green, of New York. It was well known that these fish would migrate to the sea in the autumn, and also known that when old enough to spawn they would return to fresh water, but it was not known as to whether they would return prior to that time, or whether the migratory instinct was founded solely on the necessities of spawning. The fish were placed in the river with but slight expectation of seeing any result of the effort for three years at least, at which age they first spawn. Australia planted her waters seven consecutive years before a single shad was caught therein, but the effort in California was destined to bear early fruit. Seth Green, who under the direction of the Commission imported the fish, offered a reward of $50 for the first shad caught in the river. It now appears that the reward has been earned, though not yet claimed. Last summer two Indians caught in their traps two fish of a species wholly new to them. They were caught in the upper Sacramento, about four miles from its confluence with Pit River. The Indians, not a little surprised at the capture of the finny strangers, and having never met their kind before, took them to

Mr. Elmore, who resides on the river at that point. Mr. Elmore, suspecting the truth, took them to his neighbor Hovey, who, having resided on shad streams at the East, was competent to expert the case, and who at once pronounced them genuine shad. The Commissioners regard the story of this capture as wholly reliable, and feel safe in declaring the effort to stock the river with this valuable species of the finny tribe as successful. Apropos of this, it may be stated that the Commissioners have recently placed ten thousand trout in the South Yuba, near the head-waters of that stream; also, a number of speckled trout in the north fork of the American. Somebody claiming to be authority in the matter, has declared that an acre of water is equal to an acre of land in producing food to sustain human life. If this be true, fish-culture is worthy the attention it is receiving.—*Sacramento Record.*

Ramie and Jute.—In the Report of the Commissioner of Agriculture for 1872, just received, we find an interesting allusion to the value and growth of two of the more recently introduced textile plants, Ramie and Jute, and speaking of them as likely to prove of importance, particularly to the southern States; and as we have the climate of those States and some advantages they have not, for the growing of the plants alluded to, we extract from the report as follows:

"Ramie and jute, fibrous plants which promise great value, have recently been introduced into the United States, and to some extent have been distributed by the Department in the southern States, the climate of which is alone adapted to their successful production. Of the former, little progress has been made in its use, because machinery has not been invented by which its fibre may be separated; but its value, in view of its fineness, strength, and beauty, will yet command an exercise of ingenuity which will make its culture a profitable industry.

"The latter has already taken its place in the manufacture of carpets and other fabrics as a substitute for cotton, wool, flax, and hair. Each of these, I may safely predict, is destined to occupy an important place in the products and manufactures of this country; and it is not the least important consideration that they may serve largely to diversify the crops of our southern States, a subject which has commanded much of my attention, because of my conviction of the many benefits which will result therefrom."—*Pacific Rural Press.*

Warm Water for Plants.—The temperature of the water used in watering house plants, or even those in the open border, is a matter that should receive more attention than is given it. It is too often the case that the temperature is wholly unknown, and great injury is often the consequence. There is no mistaking the effect of warm spring rains upon young grass and plants, and its influence upon the germination of seeds; whilst autumn rains—unless they too are warm—produce no such sudden and vivifying effects.

Water should be tempered, should be made temperate, and never applied to plants when below 60 deg., and had better be ten degrees higher than one lower. Experiments have shown that cucumbers in a hot bed will stand water at 90 degrees without injury; but, as a standing rule for all plants and shrubs, from 60 to 75 degrees is the right temperature.

Water used in watering plants should

be free from sediment. It is not essential that it be pure water; but for showering the leaves and branches should be as near pure as ordinary spring or river water. In watering the earth of pot or border plants, even liquid manure, or water containing fertilized salts can be used: but it should not be turbid or muddy. Such water soon fills up all the pores of the soil, preventing the ingress of air to the roots of the plant.

Extended Irrigation.—The foregoing, which refers more particularly to the application of water to pot plants, may very reasonably suggest the propriety of understanding well the properties and condition of water used for purposes of more extended irrigation. We not unfrequently hear of injury done to plants and trees by watering; and the charge is laid to irrigation; and at once a sweeping denunciation goes forth, condemning the practice as "worse than useless."

But find out the real truth, and the fault would lie, not so much in the application or use of water, as its nature, condition, or temperature. It is not spring water that injures vegetation when applied, but it is cold spring water; nor is it the excess of water, half as much as it is the mode or time of application. The subject of irrigation is one of growing importance to the interests of our agriculture, and our columns are always open to its reasonable discussion.—*Pacific Rural Press.*

Horticultural Meeting.—The annual meeting of the Wisconsin State Horticultural Society will be held at Madison, commencing February 3, 1873. These sessions are usually well attended by prominent horticulturists of Illinois, Michigan, and Iowa, who are always welcomed.

Plants for Parlor or Conservatory.—Of the many plants used to beautify the house, few equal the palms. There is a great variety of form, most of them having rather long, pendent, or curved plumose fronds. Many are delicate, and must be kept at an even genial temperature, protected from drafts, to insure any degree of success in their culture; but there are some quite hardy, that will do very well and give an attraction to any group of plants, and in any room kept a little above freezing. Among the most hardy we will name a few:

Chamaerops, fortunei, and tomentosa, very hardy; cabbage palms, chamædorea elegans, corypha australis, (fan palm), thrinax parviflora, are extremely beautiful; Latania borbonica; livistonia subglobosus is one of the prettiest fan palms we ever saw. All of the above are cheap, and can be had of most large floral establishments. — *Southern Agriculturist.*

The Medical Botany of California.—Dr. W. P. Gibbons, of Alameda, has been devoting considerable time and labor to the investigation of the medical properties of the plants peculiar to this Coast, and solicits the aid of his professional brethren in different quarters. In a paper, lately read before the State Medical Association, he describes a number of cases showing marked benefit from the *Grindelia* in Asthma, and thinks it will prove a valuable remedy, if employed with proper discrimination. There are two species which appear equally active, the *robusta* growing in low places, and the *hirsutula* on dry fields and hills. The infusion he regards as the best preparation.

Peru proposes to pay off her public debt in guano.

Hardness of Wood.—It is a great convenience to know the comparative value of different kinds of wood for fuel. Taking shellbark hickory as the highest standard of our forest trees, and calling that one hundred, other trees will compare with it for value as follows:

Shellbark hickory	100
Pignut hickory	95
White oak	84
White ash	77
Dogwood	75
Scrub oak	73
White hazel	72
Apple tree	70
Red oak	69
White beach	65
Black walnut	65
Black birch	62
Yellow oak	60
Hard maple	59
White elm	58
Red cedar	56
Wild cherry	55
Yellow pine	54
Chestnuts	52
Yellow poplar	51
Butternut	43
White birch	43
White pine	30

But it is worth bearing in mind that there is a very considerable difference in woods of the same species, according to the manner and soil on which they grow. A maple that grows slowly on an upland pasture, standing alone or apart from other trees, will last much longer and give out a greater degree of heat than one that grows in a swamp or in the midst of a dense forest. On wet, rich ground, it will be less solid and less durable for fuel, and consequently less valuable than a tree of the same kind that grows on a dryer and poorer soil. For sale, to be sure, one would be just as good as the other. To the purchaser oak is oak, and pine is pine, but for home, the tree grown on dry upland and standing apart from others, is worth a great deal more.—*Exchange.*

Rules for Preserving Fruit.—The London *Garden* gives the following as the rules of the Royal Horticultural Society, for the preservation of choice fruit:

1. As the flavor of fruit is so easily affected by heterogeneous odors, it is highly desirable that apple and pear rooms should be distinct.
2. The walls and the floor should be annually washed with a solution of quicklime.
3. The room should be perfectly dry, with as uniform a temperature as practicable, and be well ventilated; but there should not be a through draft.
4. Use the utmost care in gathering fruit, handling as little as possible.
5. For present use, fruit should be well ripened, but for long keeping it is better, especially with pears, that it should not have arrived at complete maturity. This point, however, requires considerable judgment.
6. No imperfect fruit should be stored with that which is sound, and all more or less decayed specimens should be removed.
7. If placed on shelves the fruit should not be more than two days gathered, and no straw should be used.
8. Where specially clear and beautiful specimens are wanted, they may be packed carefully in dry bran, or in layers of perfectly dry cotton-wool, either in closed boxes or in large garden pots. Scentless sawdust will answer the same purpose, but pine sawdust is apt to communicate an unpleasant taste.
9. With care, early apples may be kept until Christmas; while many kinds may be preserved in perfection to a second year.

The rules given by American fruit-growers agree very well with the above, but make especial mention that fruit rooms for slow ripening should be nearly dark, and the temperature low. Light and heat hasten maturity, and next, of course, decomposition.

Thinning Fruit.—This is a lesson which we have learned, and the necessity of which we have often endeavored to impress upon cultivators, and which every successive season teaches with stronger emphasis: It is absolutely necessary for all who send fruit to market, to send large fruit — and the markets are constantly and progressively requiring large and fine fruit. Even the Seckel-pear, which once commanded in the Boston market the highest price, will not now, unless of extra size, sell for any more, if as much, as common varieties of larger size. A medium-sized fruit, or even one of smaller size, may be more economical for use, but unless some decided change in the preferences of the majority of purchasers shall take place, large fruit will sell better than small. To produce this, the fruit must not only have good cultivation, but must be thinned. One-half the trees which bear fruit every year, would be benefited by having one-half of the fruit taken off as soon as it is well set. The over-bearing of a tree will, in a few years, destroy it. We may lay it down as a certain rule, that excessive production is always at the expense of both quality and quantity; if not in the same season, then in the succeeding one: for when branch is contending with branch, leaf with leaf, and fruit with fruit, for its supply of light and food, it would, indeed, be an anomaly in Nature, if this should not result in permanent injury to the trees as well as to the annual crop.—*Marshal P. Wilder.*

The corn crop the last season in the United States is thought to be the largest ever produced. Oats, barley and rye are about average. Potatoes less than average.

Changes in Russian River.—A correspondent of the Cloverdale *Bee* notes several remarkable changes that have taken place in Russian River in the past few years. Its banks were heavily wooded, and when it overflowed it deposited a sediment, raised its banks, and returned to its channel without doing any injury. But now, since the land has been cleared and cultivated, when the river overflows its banks, the swollen waters having full sweep carry off the deposits of light soil of former years; and as it returns to its bed, the banks are cut down at a destructive rate, changing the course of the stream and swallowing hundreds of acres of land worth from $50 to $150 an acre, and at the same time increasing the width of the river from an eighth to a quarter of a mile. The Russian river bottom will produce 100 bushels of corn and 125 sacks of potatoes to an acre.

Funeral Flowers, in New York.—In all our larger cities flowers form a large source of revenue to florists who make bouquets, etc., a specialty. In New York, the aggregate sum spent yearly on flowers is immense. Upon funeral flowers, especially, large sums are expended. The following will show the prices paid for leading sorts in Winter: The price of a handsome basket is from five to fifty dollars. Bouquets can be made at from three to twenty-five dollars. Single rosebuds costs twenty-five cents, and carnations twenty cents. Smilax is sold at one dollar a yard, and violets by the dozen at twelve cents. One spray of lilies of the valley costs twenty-five cents.

Autumn leaves — when winter comes in.

Poison Oak.—Experiments with animals go to prove that Poison Oak (*rhus toxicodendron*) may be eaten with impunity. Indeed, we have frequently heard it asserted by persons in California that they have seen it eaten by men, with a view of its acting as an antidote to its poison externally, or from mere braggadocio. All Californians are aware of the violence with which its juice acts when applied to the skin of most persons, many being severely poisoned by its slightest touch. It is also claimed that some people are so sensitive to its action as to be seriously poisoned by its exhalations, without any contact whatever with either its juice or foliage.—*Pacific Rural Press.*

Charcoal as a Purifier.—The *Country Gentleman* says: All kinds of utensils can be purified from disagreeable odors by rinsing them out with charcoal wet into a soft paste. Putrid water is immediately deprived of its bad smell by its use. When meat, fish, etc., are liable to become spoiled from long keeping, charcoal dust will keep them sweet; and if there is a single taint to meat, it can be taken out by putting three or four pieces of coal as large as an egg into the water in which it is boiled. This will effectually purify what seems too far gone for use.

Irish Bogs.—They have been celebrated for ages as simply immense basins of liquid mud of no value, and the land they occupy has always been considered as lost, till within a few years.

Out of bog mud there are manufactured splendid candles, quite equal to wax. In fact, they are formed of a material held in solution in the mass of matter, which is a rosin that is believed to be the product of trees or vegetable products of a vastly remote epoch in the world's history.

Bogwood is simply trunks of ancient trees that have been saturated in bogs for undefined periods till they are charged with various elements that not only give them a very hard texture, but an exceedingly black color susceptible of a beautiful polish. Ornaments for ladies, hubs for wheels, and various articles for the toilette, are formed from the ancient productions of primitive forests.—*Alta.*

The Banana.—This plant is an article of primary importance for the subsistence of man wherever the temperature reaches a sufficient degree of heat for its growth. An acre planted with it will support more than fifty persons, whereas the same amount of land sown with wheat will at best only support two persons. As to the exuberance of its growth, it is calculated that, other circumstances remaining the same, its produce is forty-four times greater than that of the potato, and one hundred and thirty-three times greater than that of wheat. The banana, however, does not thrive outside the tropics.—*Western Rural.*

The California *Farmer* thinks the fact that this State has only four per cent. of woodland—the lowest average in the Union—and that the forests she has are being very rapidly consumed, and that her coal-beds are at best not extensive, ought to incite immediate action on the part of her public men.

The camphor-tree grows extensively in Florida.

FAIR OAKS.

Watkins, Photo. Residence of Hon. Thomas H. Selby, San Mateo County, Cal. *For Cal. Horticulturist.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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CHOICE FLOWERING SHRUBS FOR THE GARDEN.

BY F. A. MILLER.

Our mild climate admits of the cultivation of so many desirable flowering shrubs in the open air, that it is difficult to make a selection of the very best. I could name fifty species at least, which might be recommended with safety, and which would give general satisfaction to our cultivators; but my purpose at this time is to confine myself to a very few, which appear to me the most exquisite. I will omit the Laurustinus, the Lilac, the Snowball, and many others, more popularly known among us, and name first:

The *Polygala* (I believe its specific name is Dalmaisin). This, I believe, has no superior as a hardy evergreen flowering shrub. It has many excellent qualities: it is evergreen; grows almost in any kind of soil; it stands close pruning; may be grown into any desirable form; flowers throughout nine months of the year; and is literally covered with flowers in midwinter, when other flowers are scarce. It is a strong grower, and yet it may be kept in a neat and compact form; its flowers are of a beautiful purple color, pleasing and effective. This shrub should be in every garden, and it will give general satisfaction. The Polygala may be obtained of any florist at a very reasonable price. Although its cultivation is attended with no difficulty, it is not easily propagated, which must be done under glass; it is also difficult to transplant, and is therefore always cultivated in pots, from which it may be planted out in the open ground, without disturbing the roots. The closer it is trimmed, the compacter and neater it will grow. I think, also, it would make a beautiful ornamental hedge. I am glad to say that the Polygala, so far, has been received with popular favor as an evergreen flowering shrub. To the best of my knowledge, it has not yet been introduced in the East.

I will next name the *Erica* family, of which there are many excellent varieties, which have been cultivated successfully by some of our florists. The Ericas are not so well known here as the Polygala, but I am quite certain that they will prove even more popular than that shrub, when once generally known. The Ericas are a class of plants which have been cultivated very extensively in Europe for years past, and the florists there offer hundreds of varieties; large

greenhouses are entirely filled with them. I do not say that all of these would do well in California; but, from experience, I can say that some of the best are doing remarkably well in the open air. When first introduced here, our florists were in the habit of treating them as greenhouse plants; this was all wrong, and since they have been cultivated in the open air, they are fast becoming the favorites of every florist, and, at the same time, of our amateur gardeners. They find their way slowly into our gardens, because most of our so-called job-gardeners do not even know the plant, much less its fine qualities. The Ericas are evergreen; the foliage is graceful and dense, and mostly of a dark green color; the flowers are small and bell-shaped, extremely delicate and pleasing, and of red, white, pink, purple, rose and other shades, and they almost cover the plant in time of flowering, which commences in December with some varieties, and continues throughout winter and spring. From a plant two or three years old, hundreds of little branches, full of flowers, may be cut for bouquets and vases, for which purpose they are well adapted. I hope, before long, to see as many Ericas in our gardens, as we now see of Fuchsias. The propagation of Ericas must be left to our professional gardeners, unless there are ample preparations made. The ends of the young shoots are used for the purpose; they are planted in sand, closely covered with glass, and must be carefully watched until well rooted. There is no flowering shrub which I could more strongly recommend for general cultivation.

To those already described, I will now add the *Bouvardia*, a splendid flowering shrub, which has heretofore been treated exclusively as a greenhouse plant, and which, in my opinion, is incorrect. Although this shrub has given satisfaction to florists as a greenhouse plant, it will more generally please if cultivated in the open air; our climate is well adapted for it. However, I would advise to set out strong plants of at least one year old. Under glass, the Bouvardias are much infested by insects, which is not the case if cultivated out of doors. It is also an evergreen shrub, producing waxy, tubular flowers, in bunches, of rich pink, red, and white colors. I believe it will flower continuously, the whole year around, in the open air. All the varieties may not be equally well adapted for out of doors, but *B. elegans*, *Hogarth*, *splendens*, and *Vrelandii*, will do well. For bouquets and vases, the flowers are exceedingly well adapted, and will last for a long time. A more general cultivation of this shrub ought to be encouraged. Plants may be obtained cheaply of all responsible florists. The proper time to plant them out is from this time until May.

Our amateur gardeners are constantly asking for choice plants for the garden. If they will make diligent inquiries, our florists of good standing will supply their wants, and if they are encouraged, they will continue to introduce desirable plants; but so long as people are satisfied with Cypress, Pine, and Gum trees to fill up their gardens, nurserymen and florists will suffer loss by cultivating those which they know to be far superior and more ornamental.

Crops.—The California wheat crop of 1872 is 75 per cent. greater than that of 1871, and will approximate 30,000,000 bushels. The quality is excellent. In Oregon the crop is very good, and also large.

THE RURAL HOMES OF CALIFORNIA.

BY MRS. E. S. CARR.

Of all the external signs of progress shown in any country, none are so significant as the homes which represent the standards of comfort and culture to which the masses of the people aspire.

California has so often been described as the Land of Gold, of Natural Wonders, of Corn, and of Wine, that this phase of its development seems almost the only one with which the public are not familiar. Tourists who flit hurriedly over the highways of travel rarely get more than a glimpse of the rural residences, for which Nature seems to have been preparing when she rounded the hills and fringed the cañons with living tapestries of varied green; and few of our own citizens are aware how fast these are multiplying at all the points within easy access of the business centres of our population.

Until very recently the eastern idea of country life among us has corresponded to the character which the Californian Pindar recently gave to the "Argonauts of '49," and not even the princely hospitalities at Belmont and other places have removed the impression that our homes are the creations of sudden wealth, rather than the growths of a deliberate purpose and love of rural life.

While we believe the great want of California is more of the sentiment which attaches to the hearth-stone, it is true that from the earliest days there have been home-makers among us capable of a high enjoyment of natural beauty in its development as well as its results—planters rather than purchasers of homes. In making the work better known which would do credit to the rural taste of the oldest portion of the country, and in showing the unexampled facilities for it afforded here, in the diversity of surface, climates, and productions, we hope to do a needed service.

FAIR OAKS, *the Home of Hon. T. H. Selby.* (See frontispiece.)

The name of this lovely region indicates its chief characteristic.

The missionary fathers, who always found the right places to build in, pitched upon the Santa Clara Valley as one of their centres, planting there the Olive, Vine, and Palm. On the right, as you enter it from San Francisco, the Coast Range rises in picturesque ridges, clothed at the top with the giant Redwood; and on the left, above the blue waters of the Bay, and above many lesser peaks, the cone of Mt. Diablo stands clear cut against the horizon.

One regrets not to have seen this valley when deer and antelope browsed its herbage, and the procession of the seasons was over a flower-carpet more gorgeously colored than even Mr. Ruskin's word-painting could describe. Not to see it now in the tender green of spring, or later in the golden prime of harvest, is a sin for which there can be no excuse.

If we can imagine Mr. James' "solitary horseman" set down at any point on the county road between Millbrae and Menlo Park, he would fancy himself in the oldest and best cultivated portions of the United States. The excellent roads, high tillage and ample conveniences of the farms, the sleek cattle in the pastures, and, above all, the frequent glimpses of stately residences peeping from among the trees, give an expression of finish and repose to this district not exceeded by that of the Connecticut River Valley. It would be difficult for him to believe all this the work of less than twenty years.

The Pulgas Rancho,—which, beginning at San Mateo Creek, included Menlo Park on its southern boundary—twelve miles long by three in width, was the first land for which a United States patent was issued. Upon it we find Belmont, the country homes of Messrs. Hayward, Parrott, Atherton, Latham, and other citizens of San Francisco, with many of more moderate cost and pretensions, which are occupied throughout the year.

The Selby homestead, four hundred and fifty acres in extent, is one of the oldest improvements upon the natural park which once occupied the level floor of the valley. Two species of Oak—*Quercus agrifolia*, and *Q. Sonomensis*—show here some of the most admirable forms and groupings of this family of trees, and are the frame-work of the ornamental plantations. A magnificent specimen guards the entrance from the county road. Thence by grandly sweeping curves we approach the house through close avenues of *Pinus insignis*, Monterey Cypress and Gum trees; but so many of the native Oaks remain as to give these avenues a dignity far beyond their years. At Christmas they were bright with the scarlet berries of the Holly, a native also, and of unusual size and luxuriance. Bordering the avenues are many fine young conifers, Pines, Spruces, Sequoias. etc., which have received no water since the first year after planting.

The crowning beauty of the place is *The Lawn*, whereon the fairest of fair Oaks, draped with Ivy, cast their soft shadows upon the velvet turf. Art could not heighten the effect of their grouping—close enough for shelter, open enough for cheer. A single jet of water, which falls into a wide circular basin—a mirror framed in flowers, reflecting the spiny tops of the Pines and the feathery plumes of tropical grasses—is almost the only atttempt at ornament. The suggestions of Nature have been respected here, and the views from the windows are all characterized by simplicity and breadth. Choice trees and shrubs are found, but not obtruding upon the lawn, and there has been no attempt to change the natural surface. No ugly cairn, misnamed a "rockery," suggests an Irishman and a cart. You get a glimpse here and there of an orchard, just where an orchard should be placed to be daily enjoyed by a family.

With these surroundings, the house and outbuildings are all in keeping. A roomy and commodious gothic cottage, with a wide veranda over which Roses and flowering Vines are trained, expresses comfort, ease, and refinement without ostentation. Large estates and establishments are sure to make slaves of their owners, and unless one be wise the cost and care of living is greatly increased in the country.

Of Mr. Selby's four hundred and fifty acres, less than ten are in the home grounds, and eight in the orchard. Apples, Pears, Cherries, Plums of the best varieties, Apricots and Nectarines, Figs and Almonds, produce not less than fifteen hundred bushels annually. The small fruits have a place also.

All the rest of the land is either under the plow, or used for pasturage of thirty horses and twenty cows with which the farm is stocked. The sales of wheat have amounted to $20,000, not counting the present crop of some $3,000 worth on hand. The stock, though not fancy, is of the best.

The whole is surrounded with a squirrel-tight fence, and an excellent road leads from the house entirely around the property. There is a driving-course

for the training of horses raised upon the farm. The barn, poultry-house, etc., are models of convenience, and no expense has been spared to secure the best results by the best methods.

There is a Eucalyptus-tree near the house, which has been planted nine years, fifty feet high and two feet in diameter. Pine trees send up leaders three and four feet in a single season. The Fig trees have borne almost since their first planting, and were the admiration of the horticultural experts, Messrs. Wilder and Downing, who visited the State three years ago. The Almond orchard is one of the sights to be remembered when covered with its blooming promise of fruit. All this proves thoroughness of cultivation.

The experiments of the rich are often costly failures, which discourage similar attempts even upon a small scale. Here is a home kept for pleasure, and not profit, which would be an ample fortune to one less favored than its owner, and upon which he might depend for an ample support were all other resources to fail. Taking it for all-in-all, it is a representative home, and its Argonaut, who found the Golden Fleece, has proved over again "that it is the solitude and freedom of the family home in the country which constantly preserves the purity of the nation and invigorates its intellectual powers."

NEGLECTED FLOWERS.

There are several beautiful garden-flowers, though easy of culture, that receive but little attention at the hands of our chief colonial cultivators. Among these may be mentioned the Balsam, which is one of the gayest and most charming flowering-plants, either for border or pot culture. We rarely see it in our gardens, and more rarely still at our horticultural exhibitions. When well grown, the Balsam is graceful in outline, perfectly pyramidal in shape, clothed with delicate and elegant foliage, and bearing a profusion of richly-tinted blossoms. They can, moreover, be grown as small window-plants, or as good-sized, handsome bushes for the borders; they also look remarkably well when grown in six-inch pots, and bloomed for decorative dinner-table plants, being particularly beautiful by gas-light. The mode of culture we have ourselves pursued, with success, is as follows: First of all, choosing a good, rich, leaf-mold soil, to which sand should be added, and the whole well mixed together; it is then advisable to sow in pots, which must be plunged in a cucumber-frame with slight bottom-heat, being careful not to cover the seed too deeply—not more than a quarter of an inch at most. Care must be used not to over-water; and when the plants have made their second leaves, they should be potted off into rich compost, using five-inch pots, which are sufficiently large. They will need care in potting-off, the Balsam being very susceptible of injury; and they should never receive a check, for if they do, they will not attain to large size. After potting-off, plunge them again into the frame or pit, and allow them plenty of light. The bottom-heat necessary is from seventy to eighty degrees. Judicious shading will, of course, be required, and constant attention as regards watering. The young plants will then grow very rapidly, and commence to branch out freely. Directly the pots become filled with roots, they must be shifted at once into eight or ten-inch pots, using good rich loam. Some of them will, by this time, need training, the lower branches being brought down to cover the top of the

pots; this will require to be carefully performed. When very large specimens are wished for, a still further potting will have to be resorted to, two sizes larger pots being chosen; or they can be planted out in rich and somewhat protected beds. The first blossoms should be picked off, to allow the plants to make size; for the Balsam is a rapid grower, and well-furnished plants can be obtained in a short space of time, if due care and attention be given. To secure a successional display, it is absolutely necessary to sow three times, at intervals of six weeks or so, when a continuous bloom may be secured for six months of the year. Plants cultivated in pots are much the best, plunged while growing, and until they are wanted for decorating windows, rooms, greenhouses, &c. Almost everyone can grow the Balsam, if he should be so minded; and they will repay any cultivator for the care and attention he may devote to them. One well grown and bloomed plant set between two ferns, in the drawing-room window, has a delightfully cool and elegant effect.—*Melbourne Times.*

ON WATERING.

BY E. J. HOOPER.

People are apt to think that when the garden looks dry it wants water, and they are doing good in administering that element; but, self-evident as this may seem to be, the benefit is not quite so positive as it may appear. On the other hand, there is a very great risk of doing serious injury.

How can this be? will be the ready inquiry. Plants require that the soil should be moist; when it is dry, the use of water moistens it; therefore, watering *must* be beneficial, and the oftener we water, the more benefit we confer. This seems plausible enough; but is just these so often *repeated* waterings that do so much mischief.

The climate of California is a very uncertain one as to rains, even in the rainy season, and particularly in either its commencement or ending. Therefore watering is necessary, not only during the hot, dry weather in our spring, summer and fall months, but sometimes even when verging upon winter, or tapering off into summer. But we are now speaking of the hottest weather in summer. We will suppose that a garden gets a tolerable sprinkling every evening—enough, in fact, to saturate the surface, which then looks cool and comfortable. Next day, the sun causes the evaporation of this moisture, and the ground at the surface, being as it were made into a pudding by the drip-drip of the water, becomes baked into pie when the sun has drawn off the fluid. In fact, the surface becomes what is familiarly called caked. Now, this is repeated night after night, by these dribbling waterings; and the consequence is, that the whole mass of earth gets caked or baked hard; it becomes thoroughly dry just below the surface, and, if drought continues (which it does of course in our summer), as far down as the roots grow—a very natural result—the plants languish if they do not die, their decadence in or exit from this "changing scene" being certainly chiefly caused by the heat of the sun, acting on their languid, drooping frames.

What should be done in such a case? Why, first, and above all, give up the practice of watering every evening. Break up the surface with a short digging-fork; give a thorough soaking, which, of course, must be done toward night—a cloudy sky (which, however,

occurs but seldom and only in some part of our year) favors the operation during the day; next morning hoe the surface lightly with a small, or Dutch hoe; do this as often as you can afterward for some time, instead of watering. Repeat the soaking after a week, or more, but continue, if possible, by all means, the hoeing. Thus will the whole garden be invigorated, and what was before tending toward a desert will "blossom as the Rose."

Besides caking and eventually drying the soil, slight surface waterings, if continued, encourage surface roots. This is encouraging them to place themselves in the worst possible condition under the circumstances. They may drink in a little of the water applied at night, it is true, but the midday sun scorches and paralyzes them, and the efforts of the plant to produce them is thrown away.

It is of some importance what kind of water is applied. Soft water is to be preferred to hard—and by common consent it is adjudged to be the best. It will always be better, too, if the chill, supposing it to be very cold from the hydrant, should be taken off, by allowing it to stand some time in tubs in the air. In some cases, in very small lots or gardens, the benefit will be increased greatly, by watering with diluted liquid manure. *Real* guano is good, also, for the purpose here referred to.

Plants for Vases.—When cottage grounds are of sufficient size, a handsome vase of fair proportions, mounted on an appropriate pedestal, is always a pleasing object, especially when filled with healthy, suitable plants; and I have seen rustic vases formed of twigs and branches, with the base surrounded by Ivy, when the idea of fitness to the place was unquestioned. The handsomest vase I ever saw was of medium size, with a vigorous specimen of *Russellia juncea* in the centre, and trailing over the edge was *Gnaphalium lanatum*, intermingled with the delicate stems of *Ampelopris Veitchi*. The slender, thread-like stems of the main plant were covered with a profusion of scarlet tubular flowers, hanging over, partly covering a few *Alternantheras* with richly colored leaves. I recollect a pair of broad, yet very shallow, vases situated on either side of one of our finest residences near Philadelphia, and, although many months have passed since I last saw it, yet the picture is as fresh in my mental vision as if but yesterday. The ornaments were not two feet high, and were placed upon the ground without pedestals. The surface of one was completely covered with the metallic leaves of an *Echeveria*—the other with a very dwarf *Alternanthera*. Around the base of each was a bed of some large-leaved Ivy, encircled with a ring of the choice variegated variety.—*Josiah Hoopes.*

PROGRESSIVE AGRICULTURE.

BY WILLIAM H. YEOMANS.

There is a great necessity for a *reconstructed* agriculture in many sections of our country. It makes but little difference what the latitude is, there are certain general conditions that are always the same, and the result of particular farming operations will always be the same. Thus continued cropping, with but little or no return of fertilizing material to the soil, will sooner or later produce a state of infertility, and therefore necessitate an amendment of the soil before successful farming operations can be pursued. In this consists the somewhat deplorable condition of

the southern agriculture. Too little regard has been had to the manufacture, accumulation and application of fertilizing material to the soil, so that it is in many places so reduced as to produce only minimum crops. This ought not so to be, as it is an evidence of retrogressive rather than progressive agriculture. The man who attempts to cultivate extensive fields wanting in fertility is laboring in vain; he can hardly expect even a return for his labor, saying nothing of any profits that he ought to receive; and yet, notwithstanding a full knowledge of this fact, men will labor on year after year, and perhaps attribute their want of success to some peculiarity of the season, or some atmospheric changes which they can not control.

Does not this state of things, then, prove the necessity of a change in practical agriculture? And, if so, what change is required?

For one thing, it may be said that no man should undertake the cultivation of any crop until he is prepared to give the ground upon which the same is to be cultivated a sufficient dressing of some sort of manure to warrant a crop that will not only repay for all the labor expended, but will also furnish a good profit on the investment. It requires no argument to satisfy any person that no more labor is required to produce a maximum than a minimum crop; the only difference consists in additional labor at harvesting time, which, under such conditions, most persons are willing to give. Now, although commercial fertilizers are very valuable to the farmer, years of experience have proven the fact that for all crops, and for keeping a soil in excellent condition, there is nothing better than animal manure, mixed perhaps with organic matter; the tendency of this is to render the soil more porous, and so capable of admitting a free passage of the air, which not only tends to assist fertilization by means of the gases which it contains, but also to keep the soil in dry seasons more moist, by means of insensible deposits; while, on the contrary, the tendency of mineral and inorganic manures is to compact the soil, rendering the same more difficult of penetration by the roots, as well as difficult of cultivation. One of the first requirements, then, in the line of *progressive agriculture*, is, that each and every tiller of the soil should inaugurate some system by which the fertility of his fields may be restored, and not only that, but that it be raised to such a degree as to be able to produce maximum crops. This, of necessity, will require some time and patience, and may be accomplished in different ways, one of which is by the saving of everything that possesses fertilizing elements, and which frequently is allowed to go to waste, and applying the same to the land. But the ways and means must be reserved for other articles.—*The Rural Alabamian.*

Arrangement of Cut Flowers.—The London *Gardener* says that of all the various mistakes made by persons in arranging flowers, the commonest is that of putting too many into a vase; and next to that, is the mistake of putting too great variety of colors into one bouquet. Every flower in a group should be clearly distinguishable and determinable without pulling the nosegay to pieces; the calyx of a clove Pink should never be hid by being plunged into the head of the white Phlox, however well the colors may look. Sweet Peas never look so well in the hands as they do upon the boughs over which they climb, because they can not be

carried without crowding them; but put them lightly into a vase with an equal number of Mignonette; or rather, ornament a vase half full of Mignonette, with a few blossoms of sweet Peas, and you get a charming effect, because you follow the natural arrangement by avoiding crowding of the blooms, and putting them with the green foliage which they want to set them off. Few people are aware, until they try it, how easy it is to spoil such a pleasing combination as this; a piece of Calceolaria, scarlet Geranium, or blue Salvia, would ruin it effectually. Such decided colors as these require to be grouped in another vase, and should not even be placed on the table with sweet Peas. They also require a much larger preponderance of foliage than is wanted by flowers of more delicate colors. It is unquestionably difficult to resist the temptation of "just putting in" this or that flower, because "it is such a beauty;" a beauty it may be—and so may be an Apricot—but it would be out of place in a basin of green-pea soup! There is at least one proper place for every flower; then let every flower be in its proper place.

THE COLORADO DESERT AS AN INLAND SEA.

Could the Colorado Desert be again filled with water? It is an interesting question. From the Gulf of California, it is probably an impossibility. The gradual silting up of the old gulf-bed at the mouth of the river, and the drift of sand by the wind, have interposed a barrier too extensive to be easily removed. By turning the Colorado River into the desert it might be accomplished. The project has for years been discussed, of taking enough water from the river to irrigate a stretch of fertile land, alluvial deposit, found at the southern end of the desert; but the idea of going further than this, of diverting the river into the desert, and forming a large fresh-water lake, seems never to have been broached. Nature, unassisted, is now attempting this. The drift of sand, through the prevailing western wind, is from the desert toward the east. This drift has kept the river walled in upon the east side of the valley, and has apparently constantly forced it further in that direction.

Could that desert be refilled with water—converted from dry, hot sand to an inland lake—the very heat which is reflected from the barren mountain-sides around would be a power of good instead of evil. The constant evaporation would render heat latent which is now active, thus lowering the annual temperature very perceptibly. This lowering of temperature alone, even if unaccompanied by an increase of moisture in the air, would give a greater rainfall by the more perfect condensation which it would cause. But the evaporation from the surface of the lake would materially augment the supply of rain-currents, thus acting in a double manner—a decrease of temperature and an increase of moisture from precipitation. These rain-currents would also meet with less difficulty in making their way against the ocean winds—as these winds, caused largely by the heat of the desert, would be less violent—and would, therefore, with more certainty and regularity, deposit their supply of moisture over the plains of Los Angeles, San Bernardino, and San Diego. When it is considered that every additional inch of rain is worth millions of dollars to these southern counties, the value of such a change in quantity and certainty of fall may be readily appreciated.—*Overland Monthly for January.*

"A GRAIN OF MUSTARD."

I was one of the least of the small, small things
Which from our Father's footstool springs—
But a little seed, that was wafted away
By the frosty winds of an autumn day,
Till I sank at last in a narrow cell,
Where withered leaves above me fell.
It was dark and drear in that little spot,
And I felt myself a thing of nought,
As through each long, long winter day
Alone, inanimate, I lay.

The sighing winds swept wailing near,
And through their plaint I seemed to hear
These words: "A sparrow can not fall,
Unnoticed by the Lord of all."
Then why should I, a little seed,
Sleep in the ground without His heed?
For One, who likened such as me
To "Faith," while in his ministry,
Inspired the vital germ within,
Till the genial spring, with dewy wing,
And warm, bright, sunny hours,
Awoke again, o'er hill and plain,
The dormant leaves and flowers.

I felt unfold my shroud of mold,
My tiny leaves expand
To stalk of green with foliage sheen,
Among that flowering band;
A golden crown then bow'd me down,
And for this blessing given
I waft above, with breath of love,
Sweet fragrance unto heaven. BETA.

SAN FRANCISCO, January 27th, 1873.

IVY FOR DRAWING-ROOMS.

A writer in *Hearth and Home* says: The trailing Ivy is certainly among the most beautiful drawing-room decorations. Its dark green leaves harmonize well with all other colors likely to surround it, and its graceful branches render even square windows and frames beautiful.

Six years ago a sprig of Ivy was brought from Abbotsford to Mrs. Chas. Palmer, of Brooklyn, and it now graces the arch of the folding doors between the parlor and third room of her lovely home. When first brought, this precious sprig was rooted in water, and then planted in the garden, where it remained till it had grown large enough to be brought into the house. Every spring, the shoots grown during the winter are carefully cut off, and the branches tied loosely together. The whole vine, so tied, is planted in good soil, and fastened to the garden fence, there to remain, through the summer months.

Mrs. Palmer has now two vines of about equal length, which are transplanted into large pots every fall. Each leaf is then rubbed on both sides with sweet oil, and after the pots are put in place, one on each side of the folding doors, the vines are carefully trained, and secured by strings and tacks to the wood-work. The branches of the vines on the opposite sides of the arch are interlaced as they meet, so that no division is apparent. The earth in the pots is watered daily.

Mrs. Palmer oils the leaves of both her large vines in three or four hours, by simply moistening her fingers in oil, and lightly rubbing each leaf on both sides at the same time. She is amply repaid by the entire absence of mould or whiteness from the leaves, and the fresh, vigorous appearance of the plant.

Trained over windows, doors, or pictures, the Ivy always produces a fine effect. For decorations on a small scale, vines may be grown by simply immersing the stems in small vials of water carefully secured to the frame to be ornamented. Indeed, by a judicious placing of a number of these, so that each root may have its own vial, a fine effect of luxuriance may be produced. The tops of long champagne-glasses, which have lost their stands, may be substituted for vials, and the effect greatly improved by placing either in suitable spruce-wood holders.

THE MADRONA TREE.—Branch with leaves and fruit of the Madroña *(Arbutus Menziesii)*, half natural size. Also flowers of *A. Menziesii*, half natural size.

THE MADROÑA TREE.*

BY DR. A. KELLOGG.

Ant. "Before thee stands this fair Hesperides
With golden fruit."
—*Pericles, Act* 1*st, Scene* 1*st.*

Who will solve for us that most marvelous sylvan mystery of the Pacific Coast?—we allude to the almost universal neglect of the magnificent evergreen *Madroña*, an ornamental forest tree, unsurpassed for grandeur or varied beauty.

Let us consider its just claims for a moment. We have at our bidding a lofty tree, fifty to one hundred feet in height; as seen in native haunts on the alluvial lands of the coast, or amid other forest trees, we behold it straight and trim as the most fastidious could wish — when young, easily domesticated, trimmed and trained to any form desirable; at home on foggy coasts with fierce winds, dry hillsides, or barren and burning peaks; ever clad in foliage of living green, equal to the most majestic *Magnolia*. Other trees may sleep

* *Arbutus Menziesii.*

in quiet, waiting the return of the wild song-bird, and the renewing breath of spring; but love's highest emblems never sleep; ever on the alert, she is awake with the new year, bringing gifts to the dear ones, and good to all living. Laden with shagreened orange and red berries, the most beautiful the eye ever beheld —surpassing the choicest strawberries— sweet, nutty, and delicious to the taste, she sub-tropically overlaps the rolling year with. ceaseless glory. Anon the sweet breath of her flowers—now in bloom—greet the sense, fragrant and exhilarating as odors wafted from the Happy Isles; the busy bee and the butterfly sip their nectar, but no noisome insect infests this charmed tree. The white and blushing blooms peep over the dark green background, crowding their clusters into view, or bashful and half concealed, the whiter and purer bells hide beneath the shade. It is thus she modestly droops her pretty heath-like clusters, cheering the winter months. How neat at all seasons! Changing her dress as custom requires—yet always elegant, caressing the eye, ever suing for admirers—exfoliating bark, or laying off a few superfluous leaves in the hot months of July and August—the most strikingly picturesque tree of all the groves—limbs now out fresh, smooth, and soft, with exquisitely freshened green, tender and delicate as a maiden's skin—fair tablets to carve "Rosalind" upon; the very sight of which is like inspiring a sweet zephyr just astir, breezing from out some cool, shady grove, when the traveler is faint and weary. Even the fading foliage falls unobtrusively down as comes "still evening on" in twilight dews. "Fading foliage!" did I say? Nay; the beautiful leaves brighten, like celestial hopes above, into every shade—to hallowed gold and royal purple, in exchange for the natural green of earth. So, also, the sea-green surface beneath yields to a softened, mellow white, no artist could cease to admire. With such a sheen, the enlivened shade is by far the most cheerful that ever bore that name before; myriads of bright and gay reflectors spiriting it away—meanwhile, shedding their "sweetness on the desert air." Our feet never pressed her half-dismantled robe without a feeling akin to entering the neatest ladies' parlor in the land. Instinct with the feelings of the Great Chief, we are fain to echo the eloquent apostrophe * * * "The earth is my mother—I will repose on her bosom." With uncovered head, and due reverence in the presence of orderly Nature, we are oft prone to tarry beneath the beautiful boughs; and, may we say it? always leave with the lingering regrets of a lover. Returning anon, behold the sky-green bark changed to deep orange, burning red, or sober cinnamon brown, out of due respect to autumn, and the fashion of the season. How strange the view! What marvel of moods! Fascinating by every art that could please, with ever-varying beauty. Could imagination, fiction, or fancy, portray to itself a sylvan object more wonderful, more chaste, or more charming! Consider again, that it sink deep into thy soul—its broad magnanimous canopy of large, thick, rich, shining green, and tropical foliage—vivid semblance of the Grand Magnolia (*Magnolia grandiflora*) of the South—laden, as it were, with a mass of burning berries, as we have seen it this season—its smooth, red, naked limbs, like the native red man, giant of the woods, stalking the forest with majestic tread—and you have before you the *handsomest tree of the West.*

Spare us, dear reader, the merited allusion to its timber. Ghosts of de-

parted saw-mills, and vandal skeletons with axe in hand, loom up from the other place to haunt the evening of our days. We would rather sit on Madroña's knees—that often resemble those of the deciduous Cypress of the East—and teach your children the wisdom that shall reverence sylvan use and beauty, that they may offer betimes some acceptable incense of affection for the native forest trees of the land. True, this tree, like others we could name, does not bear transplanting from the wild state well, from lack of the usual number of fibrous roots of many other trees; but it germinates easily and grows freely from the seed. "Why, then, is it not more cultivated?" The nurserymen reply, "Because, there is no demand." These and other trees and seeds should be put in the ground as soon as possible after the *first rains.*

For those not familiar with this tree, a very inadequate sketch, made by the writer many years ago, may be seen in the 6th volume of the Pacific Railroad Reports, page 23d.

RECENT FRENCH DISCOVERIES IN HORTICULTURE, ETC.

A correspondent sends us the following translation from "*Le Bien Public,*" of Dijon in Burgundy, of the 21st of April:

"An agriculturist has discovered, it is said, the means of preserving the grape-vines from their most dangerous enemy, the Phyloxera, a sort of vine-fretter or vine-grub. It seems by mixing soot with the earth around the roots of the vine, the insect is paralyzed and is killed.

Secondly, a discovery curious enough has been made recently.

An agriculturist has observed that by watering vegetables and fruit trees with a solution of sulphate of iron, the most astonishing results are obtained.

Beans have gained 60 per cent. on their ordinary size, and what is better their taste is much more savory. Among fruit trees, the pear-tree is most benefited by that process of watering.

Third, the *Revue d' Economie Rurale* announces that a new process of early vegetation has been tried with the greatest success by a horticulturist of Chatillon, France, who, besides the heating of the interior air in the green-house (hot-house) heat also the earth itself, the hot-bed on which the plants grow.

For this, he establishes at a certain depth pipes through which steam circulates constantly. The steam penetrates the interior of the earth by means of valves opening from place to place.

Such pipes are from five to ten centimetres (from two to four inches) depth by the side of the plant beds of strawberries, flowers and "graminces;" from fifteen to twenty centimetres (about six to eight inches), for fruit trees.

The earth thus artificially heated produces vegetables and fruit with an economy of half the time necessary when the interior of the greenhouse only is heated.

Thus, every one could see at this agriculturist's, early in April, strawberries that had blossomed, formed their fruits and ripened in fifteen days; violets that had developed their flowers in ten days; asparagus and artichokes which have grown and been gathered in thirty-five days.

Finally, within only forty-five days, dwarf cherry-trees have budded, blossomed, and brought forth fruits in a perfect state of ripeness."

This wonderful process of early vegetation is new as to its application to gardening. But it is taken from nature. It is well known that in several thermal stations, and especially at Aix, in France, the gardens which are near or above the thermal fountains, produce early fruit and vegetables (*primeurs*) in winter; the earth being heated by water-steam, the heat of which raises to eighty degrees centigrade. —*Maryland Farmer.*

FOREST-PLANTING, A SOURCE OF WEALTH.

BY PROFESSOR EZRA S. CARR.

In the November number of this journal, the rapidity with which our country is being disforested was shown from departmental statistics; in this I desire to call public attention, and particularly that of owners of large bodies of land in California, to the importance of forest-planting, as a source of future wealth. The value which the crowned heads of Europe have put upon their forests is well known; the stringent, and, as it might seem, almost inhuman laws made for their protection, are the result of a wise and far-reaching policy, far more creditable than our national indifference. In this, as in so many other things, with us, the necessary legislation will follow enlightened public opinion, itself the effect of individual examples and successes.

The first laws made in England for the preservation of forests (not to be confounded with laws for the preservation of game), were made by Queen Elizabeth, in consequence of orders given to the commanders of the Spanish Armada: viz., in the event of conquest, to destroy the English forests, and especially that of Dean.

Now Dean was, like Windsor and Sherwood, an appanage of the crown, filled with noble Oaks of such excellent quality for ship-building, that its destruction was equivalent to cutting off the right arm of the nation. Luckily for England and for us, the Spanish axes did not accomplish the mischief they intended; the great Oaks grew on unharmed until the time of Charles I., who reduced their numbers from 105,537 to some 30,000; one of the crimes against the English people for which a sad reckoning-day was to come. One of the first movements of the Restoration was the re-planting of 11,000 acres; and the forest of Dean, sixty-four square miles in extent, is now fully recovered.

Windsor Forest, once 120 miles in circuit, has dwindled to about fifty-six, of which the Little Park, immediately connected with the castle, containing 500 acres, and the Great Park containing 4,000, are the most important. It is well stocked with game, and contains choice plantations of exotic trees and shrubs.

The glory of Sherwood, once so famous in the legendary history of England, has departed, but it still contains 1,500 acres of very old oak timber, and within its ancient limits are found many interesting trees. The New Forest in Hampshire, originally ninety miles in circumference, also contains timber of great value.

The history of Arboriculture in England, both in the Royal Forests and the seats of the nobility, is of great practical interest to us, because the kind of trees there found of most value for timber, fuel, and the various purposes of the arts, will all flourish in a large part of the United States, and *some of the best of them are indigenous here.* In the case of the Royal Forests, the records have been carefully kept for a long period, while the local traditions of some historic trees extend back to a remoter time than that of Robin Hood or Herne the Hunter.

They are under the general control of the Crown Commissioner of Woods and Forests, and employ a small army of officials of graded rank; Lord Wardens, Deputy Wardens, Verderers, Woodwards, etc., who, it is said, deplete the royal revenue, and contract the ancient limits. It is comforting to know that they are subject to some of the evils incident to public domains

elsewhere; that squatters thrive where poachers perish without anybody being to blame. But notwithstanding these drawbacks, the Royal Forests contribute no inconsiderable part in the revenues of the crown.

The grandest tree of these forests is the Oak, the tree which, living or dead, contributes so much to the beauty of the Englishman's home, and which may be said to have given him the supremacy of the sea. It is believed that an Oak after reaching a circumference of four feet, gains a solid foot every year, and it is on this basis that the profits of the plantations, as timber, are estimated. But the thinnings are also very valuable for poles, posts, hurdles, etc. Evelyn estimated the total profits of 1,000 acres of well matured oak timber, at £670,000. The relative value of the Oak has changed somewhat by the introduction of foreign trees of a more rapid growth. Immense plantations of the Norway Pine, Scotch Fir and Larch, have superseded them in the north of England and Scotland.

Forest-planting, in Great Britain, commenced about the year 1664, through the instrumentality of John Evelyn and the Royal Society.

The wide popularity of Evelyn's writings, and his own zeal and enthusiasm, gave an immense impulse to tree planting in England. Let us see what came of it in a hundred years. One or two instances must suffice. In the year 1783, the Duke of Gordon sold his plantation of Scotch Fir to Mr. Osborne, of Hull, for ten thousand pounds sterling. Mr. Osborne made of it forty-one ships, at a cost of seventy thousand pounds. At the castle a specimen plank is shown from this first harvest, six feet long by five feet five inches in width. The ground was not then cleared, but left to produce successive crops of timber.

At Holkham, the seat of the Earl of Leicester, there is a park of 3,200 acres, "farmed in an admirable manner." The first earl planted one thousand acres of it with *acorns* of the *Quercus sessifolia*, and lived to witness, with his family, the launching of a noble ship, built from some of the trees, and to see the forest "worth a prince's ransom."

The Scotch Pine attains perfection, as timber, at from 150 to 200 years old. It is planted close, and the trees, like those of the great natural forests of Oregon, reach from fifty to sixty feet without a branch, and are from eight to ten feet in circumference. The thinnings alone are regarded as giving a fair profit on the investment.

The relative growth of the different trees used in English plantations, may be seen from a record of actual growth kept by the Marquis of Lansdowne. The trees were planted in the year 1675, on a swampy meadow with a gravelly sub-soil; the measurement was taken in July, 1785:

Name of tree.	Height in feet.	Circumference. ft. and in.
Lombardy Poplar..	60 to 80	4 8
Abele.....	50 " 70	4 0
Plane.....	50 " 60	3 6
Acacia (Locust)....	50 " 60	2 4
Elm.....	40 " 60	3 6
Chestnut.....	30 " 50	2 9
Weymouth Pine...	30 " 50	2 5
Cluster " ...	30 " 50	2 5
Scotch Fir.....	30 " 50	2 10
Spruce "	30 " 50	2 2
Larch	50 " 60	3 10

I will not dwell upon the various uses of this timber, or of the calorific value of the different species. But from the

"Close grained chestnut wood, of sovereign use
For casking up the vine's most potent juice,"

to the tree which only Americans despise, Lombardy Poplar, there is not one which we shall not require in California within fifty years, because each is as

admirably fitted to some special want of the artist or manufacturer, as the Lime is for the most delicate carving, or the Willow for gunpowder.

The indigenous trees of the Pacific Coast are the most highly prized, and among the most profitable in European plantations. The nurseries of France, Germany and Italy, are well stocked with our giant Sequoias, our Firs and Pines. Noble avenues of American Plane, and the Liriodendron or Tulip-tree of the Middle States, adorn the cities of central and southern Europe. A few poor specimens of these trees may be seen in private collections in California, but the nurserymen do not propagate them. As yet, there is little demand for anything but quick-growing, showy trees—Monterey Cypress, Blue Gum and Acacia. All our forest-planting seems tending towards *Eucalyptus culture* on a large scale. This seems the greater pity, because so large a part of the arboreal world is at our command from which to choose. The Cinchona, of South America, would doubtless flourish in some localities in our State; and China and Japan have many useful trees which could be easily acclimated here.

It is only by observing and respecting the methods of Nature that men succeed in gaining mastery over her hidden resources. Now, Nature never plants a field or forest with a single species; she loves an infinite diversity. A plantation of Blue Gum would be an abomination in her sight, and, we may be sure, she has some chosen parasite in reserve with which to destroy it. In Scotland, because Larches were most immediately profitable, they planted more and more Larches, until a fungus came which devoured first their hearts, and then all their ligneous fibres, until nothing was left of them but bark and roots. Then a cry went forth that the Larches were a humbug and a failure, until De Balfour suggested that they had become diseased from overcrowding and overstocking the land. Then it was found that, when the Larch was associated with other trees, the Ash, and the Oak especially, in equal proportion, it was as healthy as ever.

Diversified planting, like diversified farming, will prove the only profitable mode, for California, in the end. A thousand acres planted with a variety of evergreen and deciduous trees with due regard to their habits and economic uses, we believe, would be one of the safest and most permanently profitable investments that could be made upon the land. Nor need we wait even a quarter of a century for returns.

The Eucalypti, intrinsically valuable in so many respects, make admirable nurses for slower growing and more tender species, and may be used as soon as this object is accomplished. The rate of their growth and importance in our forestry, and of some other exotic trees, will be treated in a subsequent paper.

ENGLISH VIEW OF VEGETABLES AND SALADS.

The *Gardeners' Chronicle*, speaking of vegetables for culinary use, truly says: Neither one nor the other should be washed until they are about to be cooked or eaten. Even Potatoes lose flavor quickly after being washed; so do Carrots and Turnips; while water will quickly become tainted in summer in contact with Cauliflowers and Cabbages, and thus destroy their freshness and flavor. The case is still worse with Salads. If washed at all, it should be only just before they are dressed, and they should be dried and dressed im-

mediately. Nothing ruins the flavor of vegetables, and renders good salading uneatable, sooner than water hanging about them. If Lettuces are quite clean, they make the best salad unwashed; but, if washed, the operation should be done quickly, the water instantly shaken out, and leaves dried with a clean cloth. But alas! how often are they cut and washed in the garden in the morning, and pitched into water in the scullery sink until wanted. Then we are gravely asssured that our gardeners can not grow salading like the French! But what French "artiste" would be mad enough to rinse out his salad juice, then recharge his lettuces and his endives with semi-putrid water? The best practice is simply to remove all superfluous earth by scraping or rubbing, and all rough tops of leaves by cutting. Enough tender leaves may be still left on Cauliflowers and Broccoli to overlap the flowers. Salad should be sent in from the garden with most of the outside leaves and main root on. The tender leaves are easily tainted and injured by exposure, and if the chief root is cut off short, much of the juice oozes out at the wound. Where vegetables and salading have to be bought from a town green-grocer, the conditions are altogether different. Not only washing, but soaking often becomes requisite to restore something like pristine crispness.

OLD FLOWERING PLANTS.

BY F. A. MILLER.

An impression seems to prevail among those who cultivate flowers here, that flowering plants should last forever, and do well. This is unreasonable, and demonstrates that the nature and wants of many plants are not really understood. Plants of the garden as well as those of the greenhouse, conservatory, and window, have their time.

It is true that, by proper cultivation, all plants will do well for a much longer period than if neglected; but the time will come when they should be replaced by new stock.

No one would attempt to cultivate the Grape-vine by leaving it entirely to its own chances; in truth, it is a well-known fact, that it requires a certain amount of skill and experience to cultivate Grape-vines properly. The same may be said of Currants, Raspberries, Strawberries, and all other useful and ornamental trees and shrubs.

People hereabouts expect entirely too much for their money. When applications are made to a florist for a plant, the following queries are made: "Is it evergreen? will it flower all the time? are the flowers fragrant? will it grow up to a big bush?" etc. Now, it is not very often that in any one plant all these qualities are combined. If flowers are desired continually, plants must be selected which will produce flowers at different seasons. Some of the most desirable flowering shrubs are not evergreen, and, therefore, they are not looked upon with much favor. All this is wrong, and should be corrected at once. I have often endeavored to convince people, that it is far better to go to the nurseries, and select Roses, for instance, from the open ground for planting during the rainy season; these will do much better than Roses forced into bloom under glass; but from my own experience, I can say, that Roses so forced meet with a much better sale, than if taken up from the ground. Some say that they want to see the flowers when they purchase; I would say to them, go to a responsible florist, and you will not be deceived in the varieties you select. I would trust a

respectable florist just as far as I would a respectable druggist.

But to the point. You purchase a Chinese Primrose, say, in a four-inch pot, full of flowers, and in a healthy condition at this time; you may reasonably expect that it will continue to flower well for about three months longer, when it should be shifted into a five-inch pot. In doing so, only a portion of the soil should be removed, and replaced by light sandy loam, mixed with one-quarter old rotten manure. After shifting, water well, and place in a shady place for a week. You may then give it its former sunny position again, and new foliage and new flowers will make their appearance, and continue to do so for three or four months. At the beginning of next winter, shift again into a six-inch pot, in the same manner as indicated before, and your Primrose will continue to flower during the winter months of 1873 to '74. By this same treatment you may keep it another year, but I advise you to procure, after this second year, young plants again; in fact, I throw away these old plants always, to make room for the more vigorous young plants. Double Chinese Primroses I retain for a number of years, because they produce a greater abundance of flowers when several years old. Primroses, of course, should only be cultivated under glass, in greenhouses, conservatories, or windows, where they will thrive admirably.

The Cineraria is a beautiful flowering plant for winter decoration, but is of still shorter life than the former; yet, under very simple treatment, I have seen these do well for two years. A Cineraria in bloom now, will continue so for four or five months, after which time it may be set aside in some shady place in the open ground. In autumn, take the plant out of the pot, shake off all the soil, and replant in a smaller-sized pot, and for further treatment the same as for the Chinese Primroses, only keeping a little more shaded. However, I would say, that the Cineraria will not do so well in the window as the Primrose, the dry air of the room being rather injurious to it.

I have mentioned these plants as examples; but this rule may be applied, to some extent, to most plants cultivated for flowers or foliage.

Take, for instance, the Rose, which is known to everybody. In this climate the Rose makes a wonderful growth of wood, most of which, and sometimes all of it, is permitted to remain. The strength of the plant is exhausted in useless wood and foliage, and a very few, if any, good flowers are produced. If this is allowed to go on for several years, the plant becomes actually worthless. If I plant a Rose-bush, I plant it about one inch deeper than it has been growing previously. I cut the main stalk back to within twelve or eighteen inches (according to its strength), of the ground; and, if a very weak plant, to within six inches, or even less; the side branches I cut back to two or three sound buds. If planted during the winter months, some very good flowers will be produced in spring following. After the first flowering, and when the new wood is hardened, which is about the month of June, I cut back the new wood to about four or six buds on the main branches, and to two or three strong buds on the side shoots; then stir up the soil, and give a good watering. The plant will shoot out again, and good flowers will be produced in abundance during the latter part of summer and autumn. This treatment applies more particularly to hybrid perpetual Roses, such as *Geant de Batailles*, *Madame Laffay*, etc.

Tea Roses, by proper pruning, a little at a time, so as to keep proper shape and form, will bloom continually.

In order to always keep a fine selection of Roses, and healthy vigorous plants, I would replace the old stock by new plants every six years, and enrich the soil well every two years. In replacing old plants by young stock, I would also advise a very thorough overhauling of the ground, adding new soil and enriching it well. Suckers, growing up from the roots, should always be removed when they first make their appearance.

Editorial Portfolio.

IRRIGATION.

From the earliest periods, man has sought to insure his daily food by raising from the soil those supplies, which experience taught him were too precarious when he solely depended on the exciting though uncertain chase, the scanty and unreliable gleanings of wild forest fruits, and the still more uncertain take from the waters; and he has sought to obtain, by irrigation, that certainty of produce which sad experience taught him could not be relied on while subject to the alternation of seasons of drought with those of genial rains, the latter too often supplemented by disastrous floods. We consequently find unmistakable traces of most extensive systems of irrigation in doubtless the first-peopled portions of the Old World. The plains of Assyria and Babylonia are literally covered with immense ramifications of canals, which were doubtless used both for irrigation and navigation. Such systems also prevail from the remotest antiquity throughout Mesopotamia, Persia, India, China, and others of the most ancient settlements of the human race. It is on record that Egypt has possessed, from 2000 B. C., most extensive systems of canals and artificial lakes; in fact, irrigation was one of the most ancient applications of science to agriculture, and had been practiced by the ancient Egyptians, Assyrians, Babylonians, and others, from time immemorial.

Damascus, located in Syria, is reputed to be the oldest city in the world; its fame is written in the earliest records, and it is celebrated not only for its magnificence, but for the marvelous fertility of its immediate vicinity, although the country surrounding it was a dreary desert. The character of its surroundings remains the same to the present day, which is attributable to the practice of irrigation still pursued on that ancient spot of land. The water for this purpose is still drawn from the rivers Abana and Pharpar, names noted in Sacred Writ, where Naaman, the leper general, vaunted them above the river Jordan, when told by the prophet Elisha to wash in the latter river, and be clean. The instance of Damascus proves the persistent benefit of the practice.

According to the earliest records of China, irrigation has in that empire been utilized to a vast extent.

On this continent, the ancient inhabitants of Peru irrigated extensively, and the Spaniards were astonished to find that the Aztecs far surpassed the Europeans in their application of this aid to agriculture. It has also been found to be in use among many rude tribes in various parts of the world.

Irrigation is supposed to have been introduced into Britain, by the Romans, shortly after their conquest of that island.

In England, and on the continent of Europe, a lively interest has of late

years been evinced in this science, but more particularly in the southern parts. Lombardy, part of Spain, the south of France, and Italy, and the great plains and valleys of the Po, the Adige, Tagus, Douro, and others, are all most extensively subjected to systematic irrigation. Land under irrigation in Spain, obtains tenfold the price of similar land in the immediate vicinity, but not irrigated. In the valley of the Po, there are said to be 1,600,000 acres of land thus watered. Italy, however, is the only country in Europe which has shown anything like a system of general irrigation. There a net-work of noble aqueducts and canals ramifies in all directions over the country. Many of these have been in existence upwards of eight centuries. The great canal known as "Vecchiabia," was in a flourishing condition in the eleventh century. In 1220, the "Adda," which waters the plains of Lodi, was completed, and in 1460, the canal of "Martesana," extending for a distance of thirty-two miles, with many side branches, was finished.

In Hindostan, at the present day, the whole of the *rubee*, or small grain crop, is artificially watered.

In every part of the Mysore country, as well as in other parts of India, water is retained or preserved for the purpose of irrigation. The Sultan Tippoo caused banks to be made between the bases of the hills, thus intercepting the streams, which during the rainy season flow from the hill country, and, instead of being lost, are collected into vast reservoirs for agricultural use; and within the last few years, still more extensive and ramified systems of irrigation have been constructed by the British Government, and we have met somewhere with the statement that there are tens of thousands of reservoirs and artificial lakes, constructed by dams, of from one-half to one and one-half miles in length, across the streams, serving as feeders to thousands (3,330) of miles of irrigating canals.

It can thus be shown that irrigation is of the highest importance in the cultivation of the land for the production of food, and it is a subject of supreme interest to the people of these States, and particularly of those bordering on the Pacific Coast, for vast tracts of our finest grain-producing land can never be rendered steadily productive but by an extensive and systematic application of this principle. Situated as this continent is, between the crowded populations of Asia and Europe, the heaviest production of cereals will, at all times, find a ready market, as it will certainly occur that some distressing influence, either of war, flood, pestilence, or famine, will always create a pressing demand for such produce among the dense masses of people alluded to; and a facility of canal and river carriage being attained, and the produce once at the ports, it will be eagerly sought and carried away. But without irrigation, agricultural enterprise is altogether too hazardous, as the rainfall of the Pacific Coast is not intermittent as it is in the East, throughout the year, but only during the five winter months, and severe droughts are frequent. The one of '70-'71 was very disastrous, and in the San Joaquin Valley the average of seasons of insufficient moisture is four in seven; yet, during the last season, a small portion of this land, under rude cultivation, yielded 10,000,000 bushels of wheat.

The vast plain of the Sacramento and San Joaquin valleys, situated in Central California, is about 500 miles long, with an average width of forty miles, and has an area of 20,000 square miles, or about 12,000,000 acres of farming

land, with, say, fifty per cent. more of available land in the foot-hills. This plain is bounded on the east by the immense chain of the Sierra Nevadas, running nearly north and south, and on the west, by the Mount Diablo Range. The snows of the Nevadas yield a superabundant and never-failing supply of water, and among the cañons of these mountains arise for the San Joaquin Valley, the Kern, Tule, Kahweah, King's, San Joaquin, Merced, Tuolumne, Stanislaus, and Calaveras rivers; and for the Sacramento Valley, the American, Yuba, Feather, and Putah rivers, the Cache Creek, and the upper waters of the Sacramento. The Sacramento flowing from the north southerly, and the San Joaquin running from the south northerly, are both large and navigable. These, after gathering the waters of their twelve or thirteen tributaries, discharge themselves into Suisun Bay, and through the Bay of St. Pablo into San Francisco Bay.

Thus among the mountain valleys of the Nevadas could be stored water without limit, to be unlocked and dispersed, as need required, for the most elaborate schemes.

Again, in the southern part of the San Joaquin Valley is situated Tulare Lake, 200 feet above the level of the ocean, with an area of 700 square miles, or 448,000 acres; its feeders are King's and Kern rivers, and Buena Vista and Kern lakes. This splendid sheet of water is destined doubtless to play an important part in the future of the valley of the San Joaquin, as at least two-thirds of it can be irrigated, to an extent of about 7,680,000 acres.

This district of country, comprising the counties of Kern, Tulare, Fresno, and San Joaquin, differs widely from other portions of this extensive plain, as well in its large and deep cañons in the mountains—whence the water, pouring in volumes from their dark recesses, distributes itself over the comparatively level surface of the valley — as in the innumerable channels cut by these waters, forming countless islands, large sloughs, and immense tracts of swamp-land.

While thus briefly endeavoring to draw attention to the antiquity, universality, and paramount importance of works of this character—and also urging on the public, as we have frequently done during the past two years, the absolute necessity for the comprehensive and extensive application of irrigation to the agricultural lands of this coast—we are highly gratified to have the opportunity of directing public attention to the operations, in the south of California, of a company of our most reliable capitalists, who, as "*The San Joaquin and King's River Canal and Irrigation Company*," have for more than two years been engaged in a most important enterprise, in the San Joaquin Valley. Already forty miles of canal have been built and completed, from the junction of the San Joaquin River with Fresno Slough, and running in a northerly course to Los Baños Creek. This canal was commenced in the summer of 1870. It is fifty-four feet wide, thirty-two feet on the bed, and four feet in depth, and will supply 360 cubic feet per second, or 350,000,000 cubic yards per hour; and was utilized last summer for 30,000 acres of land.

Work has also been commenced at Tulare Lake. This is altogether a grand project, and comprises not only the supplying of water for irrigation and for the conveyance of passengers and freight, but also the providing of water-power for manufacturing purposes, and for all the varied needs of cities and large communities, including the supply of

pure and fresh drinking-water. This will necessarily embrace a most extensive system of embankments, levees, dykes, ditches, channels, canals, and other works of irrigation; these various operations to be gradually extended and ramified as the country fills up with population.

The gentleman under whose masterly engineering these most important prospective works are being carried on, is Mr. R. M. Brereton, who so eminently distinguished himself in the superintendence of the recent engineering operations of the British Government in India, to which we have alluded in this article.

The invitation of the company to the public is most liberal. They have no debts, and they invite subscriptions for stock (shares $100 each) on exactly the same terms with themselves. Deposit, $1; $2 payable at thirty days, and $2 at sixty days.

We wish them every success in this public-spirited enterprise.

We are pleased to see that the *Garden* has considered the article on *Bulbs*—communicated to the November number of our magazine, by our esteemed correspondent, Dr. Kellogg, President of the Bay District Horticultural Society—worthy of a place in its columns. And we are gratified that the *Bulletin* has found interest in *Native Hedges*, by the same author, in our January number.

We wish to draw the attention of our subscribers to the spirited photograph of the residence of T. H. Selby, Esq., which serves as frontispiece to our present number, and illustrates *Rural Homes* by Mrs. E. S. Carr. It is a fair sample of "Christmas Photographing" in California.

WOODWARD'S GARDENS.

These gardens maintain their position in public favor, and their spirited proprietor, with his ever active auxiliary, Andrews, is continually catering for the public gratification. Very extensive alterations are being made in the southwest angle of the grounds. Many additions and changes have been made to the stock in the conservatories.

REPORTS OF SOCIETIES.

Bay District Horticultural Society of California.—The regular monthly meeting of this Society took place on Saturday, January 25th, 1873.

The Committee on Premium List for the Spring Exhibition handed in their report, which was accepted. The Exhibition will open on Thursday, May 1st, and continue for nine days. The premiums offered amount to $1,400 in cash.

A large number of premiums are offered to the young Misses who received plants at the Exhibition of 1872, and who will exhibit them at the Spring Exhibition.

The Board of Trustees of the Society was appointed as the Committee of Arrangements for the Exhibition.

The following gentlemen were elected regular members of the Society: Th. Bogel, James Carroll, and John Kidwell.

A question being raised as to the proper treatment of Tuberoses in California, the opinion was almost unanimous that Tuberoses should not be taken up every year, but be left in the ground, where their flowering capacity will increase from year to year.

As to Banana culture in the milder regions of California, it was conceded that the Banana does not require any artificial heat in order to ripen its fruit

in any of the milder districts of California.

The Secretary was instructed to have the Premium List for the Spring Exhibition printed and distributed; and we are authorized to say that the same will be on hand for distribution about the 10th of February.

Several of the members expressed themselves in favor of establishing an Herbarium at an early date.

North American Bee-keepers' Society. The *second* annual meeting of this important Society was held at Indianapolis, Ind., on the 4th, 5th, and 6th of December last, when the Rev. W. F. Clarke was elected President; D. L. Adair Corresponding Secretary, with other officers. Has California no membership in this Society?

The third annual meeting will be held at Louisville, on the 3d, 4th, and 5th of December, 1873.

Wisconsin State Horticultural Society.—The annual meeting of this Society will be held at Madison, commencing Tuesday evening, Feb. 4, 1873, and continue through Wednesday and Thursday.

American Pomological Society.—The fourteenth session of this Society will be held at Boston, Mass., on Wednesday, Thursday, and Friday, the 10th, 11th, and 12th of September, 1873.

FAIRS AND EXHIBITIONS.

International Agricultural Exhibition in New South Wales.—The Agricultural Society of New South Wales proposes to hold a Metropolitan International Exhibition in the Exhibition Building and Prince Alfred Park, Sydney, commencing April 22d, and closing about May 3d, 1873. The Council having charge of this Exhibition cordially solicits agriculturists and manufacturers of every class in the United States —especially of every description of machinery and agricultural implements— to contribute specimens to the Exhibition, with the view of opening with that colony a valuable market for the sale of the various manufactures of this country, which stand deservedly high in that interesting and thriving colony, to which, with the Australian and adjacent colonies, it is predicted a large and most profitable trade will soon be opened, owing to the fact that our facilities for reaching those markets are much greater than those of any other country, shipments being made from San Francisco direct, either by sailing-vessels or steamships, at least once in each month. Awards will be made to exhibitors solely on the merits of their articles, without regard to the country from which they came. The Department has been favored by Mr. Jules Joubert, Secretary of the Society, with schedules of prizes, which are unusually liberal.—*Monthly Report of Dept. of Agriculture.*

A meeting has been held at the office of the Royal Horticultural Society, South Kensington, London, to consider the best means of promoting a representation of British Horticulture at the approaching Great Industrial Exhibition at Vienna, Austria.—*Exchange.*

OUR EXCHANGE TABLE.

Rural New Yorker, an excellent weekly journal, always welcome, published by D. D. T. Moore, 5 Beekman street, New York. $2.50 per annum.

For Everybody, a very readable paper, published by H. H. Sage, 325 Broadway, New York. $3 per annum.

California Agriculturist, monthly. S. Harris Herring & Co., San José. $1.50 per annum.

Rural Alabamian, a monthly magazine, forty-eight pages of very useful matter. C. C. Langdon & Co., Mobile, Alabama. $2 per annum.

Country Gentleman, weekly journal, published by Luther, Tucker & Son, 395 Broadway, Albany, N. Y., contains much excellent matter.

Prairie Farmer, a weekly newspaper well deserving support, published by Prairie Farmer Co., Chicago. $2 per annum.

Rural Carolinian, an excellent and practical magazine, published monthly, by Walker, Evans & Cogswell, Charleston, S. C. $2 per annum.

American Farmers' Advocate, monthly magazine. Advocate Publishing Co., Jackson, Tennessee. $1 per annum. Cheap and good.

North Western Farmer. This is also a monthly magazine full of interest, published by Kingsbury & Billingsby, Indianopolis, Ind. $1.50 per annum, in advance.

Farmers' Club, monthly newspaper, published by F. P. Lefevre, Oxford, Pa. $1 per annum.

Farmer & Gardener, semi-monthly journal, very readable, published by Jas. L. Gow, Augusta, Ga. $1 per annum.

North American Bee Journal, useful to bee-keepers, published by A. F. Moon, Indianapolis, Ind. $2 per annum.

NOTICES OF BOOKS.

We received the February number of the *Overland*, and found, as usual, much highly interesting matter. "Dips, Spurs and Angles," is good, and a professional friend assures us that it is drawn from the life, as he recognizes the doctor as a patient of his, and knows much of his exploits. "An Indian Reservation" and "Early Jesuit Missions in California," both characteristic articles. "Etc." and "Current Literature" as usual, spirited and to the point.

The Flower Garden, a quarterly magazine of floral progress; short, sketchy, illustrated, with interesting notices of plants. This work is bound up with the copious catalogue of Reach, Son & Co., 76 Fulton street, Brooklyn, N. Y. Price per annum, $1.

CATALOGUES RECEIVED.

It is a special pleasure to us to read over the catalogues of our friends the nurserymen, florists, and seedsmen—it affords us the opportunity of recognizing so many old friends, and of making so many new acquaintances, and at the same time of pointing out to our readers where judicious selections may be made.

We have received the advance *Retail Price List* of Briggs & Brother, Florists, of Rochester, N. Y., a very excellent list. We shall be happy to notice the catalogue, if forwarded to us.

The *Nursery Trade List* of Benjamin Reed & Co., of Aberdeen, Scotland, is at hand, copious, and well worthy of careful perusal.

Also, the *Wholesale Catalogue* of the Mount Hope Nurseries, Rochester, N. Y., for the spring of 1873; Ellwanger & Barry, Proprietors. Very concise and useful.

H. A. Dreer's very neat illustrated Garden Calendar to hand. List full, prices moderate; and cuts spirited and true to nature. Published by H. A. Dreer, 714 Chestnut St., Philadelphia.

FAVORS RECEIVED.

Thanks to Messrs. Carmany & Co., for the annual retrospective sheet, for 1872, of their *Commercial Herald and Market Review*—a most elaborate and exhaustive compendium of productive and commercial statistics, highly interesting, instructive, and useful. We wish we had it in octavo form, so that we could place it on our book-shelf for ready reference:

NEW AND RARE PLANTS.

The *Garden* (English) says: "The new conservatory climber, *Tacsoma Exoniensis*, which received a first-class certificate this summer at Birmingham, is in fine bloom in Mr. Veitch's nursery, at Exeter. Even in a cool greenhouse it has now upward of a hundred flowers on it, in different stages of growth.

—*Rural New Yorker.*

The Campanula Vidalii, is recommended as a perfect gem for the greenhouse. It is a low growing plant, with racemes of pure white, bell-shaped flowers.

New Double Chinese Primrose—(*Primula sinensis coronata.*) This new and promising double Primrose has been produced by Miller & Sievers, florists of San Francisco, and is a very distinct variety. The flower consists of cut-lobed, fringed and laterally recurved petals, and the centre of unexpanded fassicles (connivent clusters) of floral leaves. Color, pink with a purplish tint.

A Sensitive Oxalis.—The late Dr. Welwitsch, of the *Gardener's Chronicle*, tells us he discovered, in Angola, an *Oxalis* so sensitive that its leaves would close by a mere footfall near it. But the leaf-stalk does not fall as in the common sensitive plant, but closes in over the crown, going up instead of going down.—*Gardener's Monthly.*

New Canterbury Bell.—Almost everybody knows the Canterbury Bell. Large blue or white flowers, and covering a pretty large plant with large blossoms, there are not many new plants showier than this old-fashioned thing. Lately this has been "improved:" at the base of the bell-shaped corolla there is usually a green five-cleft calyx; but in this new race the green calyx segments have been developed into broad petal-like processes, of the same color as the corolla, giving the plant a very unique and grand appearance. But our readers must not look for it in seed catalogues as Canterbury Bell. This is too vulgar; but they will see it as *Campanula medium calycanthema alba.*—*Gardener's Monthly.*

New Bicolor Geranium—"Pride of Mount Hope." It is a seedling of Messrs. Ellwanger & Barry, and a cross between Buist's Beauty and the well-known Mrs. Pollock; foliage large and of a brilliant yellow color, with a broad chocolate zone. Unlike all other Bronze Geraniums we have yet seen, this succeeds best under the hottest sun; the bright colors of the leaves do not appear on plants grown in the shade or under glass. Its vigorous habit and highly colored foliage will make it, we think, a very effective and valuable plant for borders, edgings, etc. "It is certainly far more effective than any tricolor or bicolor yet introduced," is a reliable English opinion of it.—*Gardener's Monthly.*

Achyranthus Casei.—During the summer of 1871, Mr. Case, of Richmond, Ind., secured a sport from *Achyranthus Lindenii*, very similar in its markings to *Achyranthus aurea reticulata*, though

differing from it in having perfect leaves, like the original *Achyranthus Lindenii*. It stood the sun well during the past summer, retaining its color, and every way proved, Mr. Case says, a good bedding plant.

—*Gardener's Monthly.*

New Magenta Primrose — *Lady Madelina Tayleur*, (Knox). Mr. Cannell, in his English Catalogue, says: Who, when they first see the dear old English Primrose showing its bright, yellow bloom, can help but welcome it as the herald of approaching spring, and feel that stern and dreary winter has passed and gone, and that the glorious and flowery summer is near at hand; but how much more is that beautiful yellow emblem surpassed by the introduction of that splendid bright magenta-colored variety, which valuable kind was raised in Ireland. Its habit of growth and freeness of bloom, is in every way similar to the yellow variety. It is figured in the *Floral World*, and considered by the editor of that periodical, who had a plant submitted to him for inspection, to be one of the choicest hardy gems of new plants this year. A great acquisition for spring bedding. — *Gardener's Monthly.*

Amaranthus salicifolius.—This new plant of last year did not please in the early part of the season, but in the fall, when it changed the color of its upper leaves, it became a great favorite.

—*Gardener's Monthly.*

The Knowfield Beech. —Everybody knows the beauty of the blood-leaved Beech. This new variety is advertised in England at a high figure. It is said to have stripes of green and gold through the regular blood-colored leaves. The little plants are five dollars each. It is said to have been a sport from a blood-leaved Beech, and has maintained its character under propagation. If it comes out as it is represented, it ought to be one of the finest things ever introduced.—*Gardener's Monthly.*

NEW VEGETABLE.

New Onion—The Queen.—The English say that this is an extra early kind. "If sown in February, it will produce onions from one to two inches in diameter in four months." It is also said to be a good keeper.—*Gardener's Monthly.*

WORK FOR THE MONTH.

BY F. A. MILLER.

At the time of writing this, a glorious rain has set in again, after a long spell of pleasant weather, which has enabled farmers and gardeners to go on uninterruptedly with the preparation of the ground, sowing, and planting. Taking everything into consideration, this son seems likely to prove one of the finest on record for a plentiful crop of everything. Grand results are almost certain, and in view of this fact, I would appeal strongly to our farmers, gardeners, and cultivators, on however small a scale, to devote a small amount of money and labor to the planting of trees, shrubs, and flowers, which will surely make their homes more pleasant and cheerful. These improvements are not made in vain; the comfort which they afford can only be appreciated by those who have actually commenced the work.

If fast-growing trees are desired, no better can be recommended than the Australian Gum-trees (*Eucalyptus*), of which several good varieties may be bought very reasonably. I would recommend in particular *Eucalyptus glo-*

bulus, E. obliqua, E. amygdalina. Purchasers should see that the balls of earth around the roots are well secured; if the earth is allowed to crumble from the roots, they will surely perish.

The Acacia is a very good evergreen tree, and thrives exceedingly well here. Plant at least three or four varieties. For shade, I recommend *A. latifolia, A. hemolophylla, A. floribunda, A. melanoxylon, A. linearis, A. mollissima;* for windbreaks or hedges, *A. verticillata* and *A. armata* are excellent.

For ornament, *Cordylines, Dracoenas,* and *Grevillia robusta* are very desirable.

Of coniferous trees, good varieties are too numerous to mention: Lawson Cypress (*Cupressus Lawsoniana*), Monterey Cypress (*Cupressus macrocarpa*), Monterey Pine (*Pinus insignis*), *Juniperus funebris, Libocedrus decurrens,* and many others, are fast-growing trees, apt to thrive well everywhere. I have mentioned these trees for general planting on farms and around country residences.

The ground in the vegetable garden may now be prepared by first giving a good top dressing of old stable manure, which should be incorporated with the soil by spading it about twelve inches deep.

For Asparagus, Rhubarb and Carrots, the soil should be worked deeper, in order that the roots may penetrate to a greater depth. Lettuce, Radishes, Spinach, Carrots, Early Turnips, Parsnips, Peas, Onions, Asparagus, Celery, and all the hardier vegetables, can be sown in February and March.

The planting of bulbs in the flower garden should be continued. Hyacinths, Tulips, Pæonies, Lilies and Amaryllis, deserve a place in every garden.

Gladiolus are indispensable; but I would recommend to plant them in succession every month, that we may have them in bloom at all seasons of the year. I have already planted some, which are expected to flower in May. For a brilliant show in the garden, and as cut-flowers for vases, they are exceedingly fine.

Hardy flower-seeds can be planted in February and March; as such, I would recommend Candytuft, white and purple, Sweet Alyssum, Stock Gilly, Wallflower, Pansy, Larkspur, Mignonette, Nemophila, Sweet Peas, Phlox Drummondii, Portulacca, Pentstemon, and Gypsophila.

Plants in the greenhouse, conservatory, and the window, should as yet be watered sparingly. The frequent fumigation of the greenhouses with tobacco smoke, and the careful cleansing of plants from insects and dust, should be attended to. The warm weather brings insects by thousands, and unless their progress is checked, they will soon get the best of you. Diluted soap suds make a very good wash for plants.

During warm days, give plenty of fresh air for the greater part of the day.

The propagation of tender plants must still be delayed, unless artificial heat can be applied; the same I would say of choice flower, tree, and shrub seeds.

If Dahlia roots have been taken up in autumn, they may now be set under the shelves of the greenhouse, or some other protected place, covered with dry earth, and permitted to sprout; when sprouts make their appearance, the roots may be divided so as to give one or two round eyes or sprouts to a root; they may then be planted singly into the open ground.

Black Hamburg Grape Vines are mentioned as at Castle Wellan, Ireland, said to be one hundred years old, and which yet bear very fair crops of fruit.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

Of the great value of fruits as food, little need be said. This is now, nearly universally, thoroughly understood, and of their tendency to promote not only health of system, but even morality of character, much has been written. But the good of every kind for man can scarcely be too often repeated. Let the well-being of the human race be continuously impressed upon our thoughts and memory, and we need frame no excuse for so often, in these articles on the fruit markets, reiterating our advice to the public to use ripe fruits (the objects of our favorite notice and treatment in all our writings, through a now rather exceptionally prolonged life) in a liberal manner, as the partaking of them freely not only *prevents disease*, but their regulated enjoyment helps to remove that which already exists. All ripe fruits are, also, more or less nutritious. Professor Salisbury, too, has clearly demonstrated that the APPLE is superior to the POTATO, in the principles that go to increase the muscles and the *brain* of man; and in fattening properties, it is nearly equal, when cooked for swine, or fed raw to that great friend of man — the horse — and also to some other of our domestic animals. The juice of ripe Grapes has cured epidemic dysentery, and French physicians often send their dyspeptic patients to the vineyards to feast freely on their produce, and they often derive great benefit from so doing. They have also occasionally advised the use of "cooling acid fruits;" and the earliest writers have directed the sugary ones, as Figs, for food in convalescence. Families, where fruits are most plentiful and good, and prized as an article of daily food, are most free from disease of all kinds, and more especially from fevers and "bowel complaints." Most fruits aid digestion — some directly, some indirectly — and lessen the desire for alcoholic or stimulating drinks. The juicy ones act as "diluents," and all as "diuretics;" the free acids neutralizing, or rendering soluble the earthy matters in the blood, and carrying them off rapidly through the natural channels. So great a use of the flesh of animals, forming our chief diet at all our meals, is not only unnecessary, but, we think, decidedly prejudicial to man's health and well-being. At any rate, our own experience is, that by discontinuing the eating of meat to some extent, we have been rewarded, for the last twenty years of our life, with better health and more real enjoyment, than we had experienced during many years before, when meats formed a large portion of our food.

There can not be found in any part of the world, perhaps, a more propitious climate and soil for the propagation and success of fruits in general, than in California. The influence of climate on varieties has the effect to create more or less rapid growth of both tree and fruit, as we go north or south, causing in the tree a coarser, spongier and softer wood, when grown south; and in the fruit, greater size, more open and coarser texture of flesh, and corresponding depreciation in flavor, with earlier maturity in the Apple and Pear; but the Peach, Apricot, and Nectarine, have additional character and sweetness, and the juices are more elaborated. This may be said to be true, in a measure, here in our warm, stimulating climate. But if we suffer in some degree from a rather too pushing climate and soil in regard to some of our fruits, we gain more by the congeniality of our region with others, and are enabled to

embrace a much larger variety of fruit than the more northern and cooler climes, and can enjoy many—especially the Strawberry—for a longer time every year. We need not the forcing of fruits by man's hot-house labor and ingenuity, but are indeed largely blessed from the prolific hand of Nature almost alone, and whether the bounties of Pomona are enjoyed at the rich man's table, or are munched by the laborer at the roadside—whether dealt out to the million, or picked from the sidewalk by the ragged urchin (though, fortunately, owing to the great abundance of all kinds of food, there is but little necessity for the latter mode of procuring them). The supply is indeed plenteous. However, it is time for us to speak more practically of the condition of our fruit-markets this month.

Of Los Angeles Oranges we have further arrivals, and they come to a good market at this time, and will find, no doubt, a speedy sale.

Of Bananas we have had a pretty good supply for some time.

Although California Apples are in plenty, and have a somewhat dry and mealy character compared with those brought from one or two hundred miles north of us, or with the Oregon fruit, yet we think there is an improvement in their juiciness compared with the produce of the last two years. Oregon Apples have not yet arrived in large quantities.

The Italian Chestnuts have failed in their usual good condition this year, and there are but very few good ones in the market.

California dried Figs are in their best condition, now, on account of their freshness.

Eastern Chestnuts are good and plentiful, and are quotable at 25 cents per pound. Filberts and Brazil-nuts the same. California Walnuts outsell the Chile from 5 to 8 cents per pound, and fetch 20 cents. Hickory, 20 cents. Native Almonds, 20 to 25 cents for hard, and 25 for soft-shell. Smyrna Figs, 25 to 50 cents; Prunes, 20 to 35 cents per pound.

Apples sell by the box from $1.25 to $2.50; Pears, $1.50 to $3.50 per box. The chief Pears, and the best, are the Winter Nelis—the Glout Morceau is scarce as usual—Easter Beurrés are in good quantity. The Vicars are nearly gone. The large baking Pears are more interesting for their great size, than for their valuable qualities.

We observe in Clay Street Market some fine California dried Raisins, and pitted Plums. The Plums are Coe's Golden Drop, Jefferson, Ickworth, Petit d'Argent, Reine Claude de Bavay (Green Gage), Bradshaw, Columbia, and Gen. Hand. They are very large and rich in flavor—from Mr. Ballou, San José. They are put up nicely in boxes, and look as tempting as the best dried French Plums, or Plums d'Ente. The price is 30 cents per pound, and by the box $3.50.

Grafting Geraniums—Has been practiced very little in this country, but when our gardeners learn its value, it will be extensively used for the slow-growing but elegant Zonale varieties. Even for the purpose of obtaining a supply of good, strong cuttings, grafting the weaker sort upon the stronger will be found of considerable value to the commercial florist.—*Exchange.*

It has been discovered by Minnesota farmers that two acres of sunflowers will supply a family with fuel through a long winter. The wood of the stalk and the oil of the seed, it is said, make roaring and cheerful fires.

Correspondence.

To the Editor of the California Horticulturist:

Dear Sir:—Since your publication of the article on "Hyacinths in Sponge," in the January number, I have invested in some bulbs of that description, and followed the directions given in the article. Although but a short time has elapsed since I placed the bulbs in the sponge, I can already see very satisfactory results in growth.

A friend, living in Oakland, has had somewhat longer experience in this new mode of culture, and tells me that a bulb of the Chinese Hyacinth, treated in this manner, pushed out its foliage to the height of a foot, threw up its first flower-stalk, and bloomed, in thirty-one days; the second flower-stalk being then well developed.

I have two bulbs under treatment, which promise well. I also learn that several of my lady friends have undertaken the experiment, and I expect to be able to give you full details of their success, as well as my own, in a future number of your valuable journal.

M. A. C.

San Francisco, Feb., 1873.

Editorial Gleanings.

HOW THE FUCHSIA ACQUIRED CELEBRITY.

The New York *Tribune* relates the following pleasant story about the first Fuchsia:

Old Mr. Lee, a nurseryman and gardener near London, well known fifty or sixty years ago, was one day showing his variegated treasures to a friend, who suddenly turned and declared, "Well, you have not in your collection a prettier flower than I saw this morning at Wapping." "No; and pray what was this phœnix like?" "Why, the plant was elegant, and the flowers hung in rows like tassels from the pendant branches, their colors the richest crimson; in the centre a deep purple," and so forth. Particular directions being demanded and given, Mr. Lee posted off to the place, where he at once perceived that the plant was new in this part of the world. He saw and admired. Entering the house, he said, "My good woman, this is a nice plant; I should like to buy it." "Ah, sir, I could not sell it for any money, for it was brought me from the West Indies by my husband, who has now left again, and I must keep it for his sake." "But I must have it." "No, sir!" "Here," emptying his pockets, "here is gold, silver, copper;" (his stock was something more than eight guineas). "Well-a-day, but this is a power of money, sure and sure!" "'Tis yours, and the plant is mine; and, my good dame, you shall have one of the first young ones I rear, to keep for your husband's sake."

A coach was called, in which was safely deposited our florist and his seemingly dear purchase. His first work was to pull off and utterly destroy every vestige of blossom and blossom-bud; it was divided into cuttings, which were forced in bark-beds and in hot-beds, were re-divided and sub-divided. Every effort was used to multiply the plant. By the commencement of the next flowering season, Mr. Lee was the delighted possessor of three hundred Fuchsia plants, all giving promise of blossom. The two which opened first were removed into his show-house. A lady came: "Why, Mr. Lee, where did you get this charming flower? "It's a new thing, my lady—pretty, is it not? "Pretty! 'tis lovely. Its price?" "A guinea. Thank your ladyship;" and one of the two plants stood proudly in

her ladyship's boudoir. "My dear Charlotte! where did you get that elegant flower?" "Oh, 'tis a new thing; I saw it at old Lee's; pretty, is it not?" "Pretty! 'tis beautiful! Its price?" "A guinea; there was another left." The visitor's horses smoked off to the suburb; a third flowering plant stood on the spot whence the first had been taken. The second guinea was paid, and the second chosen Fuchsia adorned the drawing-room of her second ladyship.

The scene was repeated, as new comers saw and were attracted by the beauty of the plant. New chariots flew to the gates of old Lee's nursery ground. Two Fuchsias, young, graceful, and bursting into healthful flower, were constantly seen on the same spot in his repository. He neglected not to gladden the faithful sailor's wife by the promised gift; but ere the flower season closed, three hundred golden guineas clinked in his purse, the produce of the single shrub from the window in Wapping; the reward of the taste, decision, skill and perseverance of old Mr. Lee.

Cut Flowers.—In cutting flowers for vases or bouquets, it is never well to break them abruptly from the stems, but cut them off with scissors or a knife—the latter being the best, as it is less likely to injure the minute pores or tubes of the stems which draw up the moisture needed to nourish the flower. If they are gathered while wet with dew, they will keep longer than if cut when the sun shines hotly upon them. If it is desirable to keep them a great while, a pinch of saltpetre and of common salt added to the water will prevent their decay, and also remove all unpleasant odors from the stems. Boiling water turned upon the stems of faded flowers, and allowed to stand upon them until completely cool, will frequently restore them to freshness. Cut off the stalks for half an inch or so before putting them into cool water, which should not be icy cold.

A Floral Curiosity.—A wonderful flower is described as existing at Constantinople, belonging to the Narcissus family of bulbs. There were three naked flowers on the stalk hanging on one side; the underneath one was fading, while the two others were in all their beauty. They represented a perfect humming-bird. The breast, of bright emerald green, is a complete copy of this bird, and the throat, head, beak, and eyes, are a most perfect imitation. The hinder part of the body and the two outstretched wings are a bright rose color, one might almost say flesh colored. On the abdomen rests the propagation apparatus, of a deep, dark brown tint, in form like a two-winged gad-fly.

The Diadem Pinks.—No flower novelty introduced in the past ten years has given so much delight as the Diadem Pink. At first some trouble was experienced from mixed seeds and sorts untrue to name, but now propagators have obtained a strain of true character, and the bloom of perfect plants is unequalled for its brilliancy by any other plant in the flower-garden. The Diadem Pink is a flower that is so eminently worthy of culture in every garden, we can recommend it for general trial. With us it has done exceedingly well on light, warm soil. They will bear considerable manure, applied well-rotted in either the fall or spring. The same treatment given to Sweet-Williams will produce good blooms of this also.—*Ex.*

Cross Breeding of Fishes.—Mr. B. Hanson, of Stavanger, in Norway, has, according to a correspondent of the *London Athenæum*, accomplished a very novel feat in pisciculture by producing a new hybrid species, a cross between *Salmo alpinus* and *Salmo eriox*, the former species spawning four weeks before the latter. Mr. Hanson's manner of bringing together the spawning maturity of the two species is ingenious. When *Salmo alpinus* has been spawning for some time, Mr. Hanson secured a female fish in an interesting condition, and imprisoned her in a perfectly dark tank, where he left her alone. In like manner Mr. Hanson, as soon as possible, secured the sire of the first couple of *Salmo eriox* he found in mature condition for spawning, and put him under a similar arrest, and kept a close watch over both until the time of the sire came. In this manner Mr. Hanson succeeded in rearing, with only a loss of one per cent. in his spawning boxes (supplied from a subterranean well which flows with a uniform temperature of about 5½ degrees Réaumur all the year round) a new species, which attains a full development in four years, and is remarkable for its exceeding vigor and wildness in water, and its palatableness on the table. Mr. Hanson entertains sanguine hopes of this species becoming self-productive in course of time, contrary to all experience of hybrid fish, because he has already caught in his pond several individuals with roe in them.

Butchering Young Trees. — Young shade trees on the outskirts of the city are being horribly hacked and butchered by parties who have the cheek to call the operation "pruning." If there is no provision made in the code for the severe punishment of parties guilty of such vandalism, the Commissioners have failed to fulfill their whole duty. The cork-barked elm, naturally a symmetrical tree of sturdy growth, needs but little trimming at any time, and to witness an unskillful operator slashing away right and left with knife and saw among its shapely branches promiscuously, is a species of barbarity and a sacrifice of the beautiful which should be frowned down everywhere. This promiscuous, slashing process to which handsome young trees are too frequently subjected, seems to be done with a view of producing a tree to resemble as nearly as possible a gooseberry bush placed on the end of a long pole. The process is simple tree torture, and the parties executing the miserable work appear to possess about as keen and delicate a sense and appreciation of ordinary good taste and useful art as a pack-mule might be expected to manifest. —*San Joaquin Independent.*

A Timely Hint. —In transplanting tomatoes, cabbages and tobacco plants, prepare a tub of manure water, and thicken it to the stiffness of mush by stirring in rich garden mold; dip the root of the plant in this paste before setting in the ground; press the earth firmly around the root, and sprinkle with manure water.

The grandest forest of pine lumber in California, containing white, yellow and sugar pine, cypress and arbor vitæ, and other trees valuable for timber, lies between Susan Valley and Pit River.

Wild flax, which appears as if it might be tamed, has been found in the Klamath Lake country.

MILLBRAE.

Watkins, Photo. Residence of D. O. MILLS, Esq., (President of the Bank of California,) San Mateo County, Cal. *For Cal. Horticulturist.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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THE RURAL HOMES OF CALIFORNIA.

BY MRS. E. S. CARR.

MILLBRAE, *the Home of D. O. Mills, Esq., President of the Bank of California.*

No adequate idea of Millbrae can be obtained from a single picture. The estate is so large; so much of its beauty is hidden in the sheltering hills and along wild, wooded cañons; so many works of art and of taste have been gathered to adorn this truly noble and attractive residence; as to require a series of pictures for its full illustration. The development of its natural advantages will require more than one life-time for its accomplishment; but we hope to show how wisely the work has been planned, and with what careful and loving study of many beautiful arts its finishing proceeds.

Millbrae, covering 3,000 acres, and the adjoining Easton estate containing 3,000 more, belonging to another member of the family, is farmed as one property. It was originally a part of the Burri-Burri Rancho, and was purchased from General Wilson sixteen years ago.

The San José Railroad cuts across the eastern portion, behind which the Sierra Moreno rises in a series of irregular benches to an altitude of nearly three thousand feet. Every variety of landscape, from wild, rugged gorges, clothed with the Douglass Fir and Madroña, to those of softest pastoral beauty, may be enjoyed within its boundaries—mountain stream and loch, the gentle curves of San Bruno, the wider sweep of the great bay with Diablo in the distance, and the ocean itself.

With all this diversity of surface, there is scarcely an acre of its land not valuable for agricultural purposes. San Mateo is one of the great dairying counties of the State, and Millbrae is its great milk-dairy. The fogs which condense on those uplifted pastures keep them green for months after the valleys are withered and sere; and during the driest period, the overflowed lands along the bay afford abundant food for cattle. Twice a day the railroad train takes the product of pure, fresh milk, from five to seven hundred cows, to be distributed within an hour in San Francisco.

It is said that Woburn Abbey, the most complete place in England, is also the most complete *farmery* in the world; and as truly it may be said that the most costly and finished home in California rests upon a solid basis of utility.

The admirable management of this

dairy deserves more than a passing notice. First of all, the manager, Mr. A. F. Green, is a master of his business, and detects the qualities of an animal from its points, as unerringly as Prof. Owen would reconstruct its skeleton from a single bone. His large experience and careful oversight, with the liberal outlay which has been made to secure the best and most economical methods of housing, feeding, and tending the stock, have brought the gross proceeds of the *milk* sales to $7,000 per month. The stock, mostly graded Short-Horns and Devons, is carefully bred, and shows constant improvement. The best English dairymen prefer half or quarter-bred stock to the full-blood, and our experience in California seems to coincide with theirs. No inconsiderable profit is derived from the sale of calves, and cows turned off for fattening.

Looking at the photograph, the long line of buildings seen upon the railroad to the right of the mansion is the dairy, which consists of a centre and two enormous wings. As you enter the first, you see huge vats filled with running water; these are the cooling tubs into which the milk-cans are plunged as soon as they are filled; in the rear is a large apartment where they are washed, aired, and dried. The wings contain a double row of cattle-stalls; an iron track runs through the centre, along which the loads of cut-fodder, oil-cake, etc., is conveyed and thrown into the feeding-troughs. Ventilation is so perfect, and cleanliness so thoroughly attended to, that there is less to offend the most fastidious sense here, with 500 cows under one roof, than in the barn of an ordinary farmer.

North of the dairy is the farm-house, a very comfortable and convenient home for the twenty-five men employed in milking and taking care of the animals. The building to the left, near the entrance, is occupied by the manager. Between the dairy and the bay, Mr. Mills has recently inclosed with a levee four hundred and fifty acres of salt marsh, which is now covered with *fresh* water. It is to be hoped that this costly experiment in reclamation will result as favorably as the Duke of Bedford's, who pumped 18,000 acres dry with steam-engines, and made of it the most profitable farm in England.

The Millbrae Mansion House occupies a site chosen by Mr. Olmstead after much careful study of the property, and answers more than any building we have seen, East or West, Mr. Downing's ideal of the perfect American Home—"A country house where the establishment may be moderate, the living rooms compact and well arranged, the labor-saving appliances multiplied." It is all this and more. It is the product of tastes enriched with the best experiences and advantages of city life, brought to bear upon Nature in developing her highest uses.

The poet Holmes wrote, with an east wind blowing upon him, his conviction that "the finest women grow under glass." If it could be true anywhere, it should be when the crystal gives you so much of sunlight and moonlight, and discloses every change upon the Great Mother's face. A view like that from the library windows at Millbrae, across the green meadows, over the blue waters of the bay, through the Livermore Pass into the pleasant Suñol Valley, up to the great cone, now white with winter snow—or southward, over cultivated fields toward the valley of San Mateo, whose embowered homes and white steeples bring a sense of neighborliness into the seclusion—certainly must tend to make "the man and

the action fine" to whom they are as daily bread.

A very correct impression of the architectural effect of the building is given by the photograph. The massive simplicity of its style is well carried out in the interior. Alighting within the *porte cochere*, you pass through a vestibule into the staircase hall—a nobly proportioned apartment, enriched with beautiful woods, and adorned with choice masterpieces of the sculptor's art. Folding doors open from this into the drawing room, which has an eastern outlook, through a wide veranda inclosed in plate glass. This room is *en suite* with the library (one in fact as well as name), wherein one may keep company with the best minds of all the ages; also with a beautiful morning room, and the luxuriantly appointed billiard-room. The south front commands a view across the lawn to the conservatory, and contains the dining-room and its accessories. There is a private office on this floor, and, in short, every convenience which the various tastes of the family or their guests may require. All the offices which are usually crowded to the rear of our dwellings, are placed in the basement—so light, airy, and well ventilated, so filled with all labor-saving appliances, as to leave nothing to be desired in that direction. The bowling alley reaches across the building, and occupies the west front of the basement-story. The main staircase leads to the picture gallery, which occupies the space immediately over the hall; and here we are tempted to linger far beyond our prescribed limits. Spacious chambers, filled with every luxury of modern life, open to us on every side; but Art makes its own atmosphere. Standing before Merle's exquisite painting of "Poverty," you are borne far away from Millbrae to the crowded streets wherein the old, old story of sacred Motherhood, in conflict with Want and Sorrow, is told anew. Here, too, is the famous picture of Cleopatra before Cæsar, by Gerome, over which critics dispute even as historians have quarreled over the great Subject, whose feet were of clay, and whose face was a consuming fire. I think History, and Shakespeare, and William Story are all justified in this painting. There she stands, lithe as a leopard, graceful as a date palm, the incarnation of intelligence and will, without a trace of moral quality. American art is well represented at Millbrae, both in painting and sculpture. Randolph Rogers' "Ruth" adorns the hall, and the gallery contains choice pictures by Bierstadt, both Harts, Bradford, and many others. One feels that the arts of home decoration have been well and faithfully studied to produce the results seen in all the appointments of the Millbrae home. Something quite beyond the upholsterer's art has determined the style of ornamentation, the harmony of colors, and adaptation of forms to uses.

The conservatory, finished only a year ago, already affords many new and interesting subjects of botanical study. It is the finest structure of the kind on the coast, and serves the double purpose of a grapery and tropic house. In the latter department, directly under the great dome, the spray of a fountain can be thrown to the roof, to fall again in a grateful shower upon the plants, whenever it is needed. Extensive propagating and forcing houses are placed near, and the apparatus for heating and ventilation is the best in use.

As much may be said of the barn and stables, which are seen near the foreground of the picture. Both these and the gardener's house are concealed from the windows of the mansion, either by

the contour of the hill or the oaks which cover it.

The *home grounds* are improved upon well considered plans, and present many attractive features. A glazed pavilion, which commands a lovely prospect, and invites one to rest after a walk in the oak grove, or along the banks of the trout ponds, is an embellishment of recent date. So are the precious bronzes and antique vases which are now finding appropriate places on the lawn.

Whatever may befall Millbrae, it will never lose its verdure "while grass grows and water runs." For the water resources are ample; a reservoir of six thousand gallons, fed by perennial springs, supplies the house and contiguous grounds, backed by one still larger — holding a million gallons. Should these fail, Spring Valley, with its lake three miles in length, is in the near neighborhood.

If we have lingered too long over this description, it is partly to show the reasons for believing that this part of California, despite the winds which make the trees one-sided, is destined to become the seat of the highest civilization. The busy metropolitan life of the Bank President enhances the delights of a rural home occupied and enjoyed at all seasons of the year, and the pleasure of improving it is fully shared by the ladies of the family. Still young enough to be "planting backlogs for their old age," the Millbrae folk have learned that "the best furnished soul knows both town and country at its best," and how to combine most happily the advantages of both.

Sweet potatoes to keep well must be thoroughly ripened. Then they should be stored, or hung up in a warm, dry place.

ANNUALS.

BY F. A. MILLER.

It is really surprising that we do not see more annuals cultivated in our gardens, when it is generally admitted that they give so great variety and such pleasing effect to the flower-beds. With a very small outlay many little groups of bright and charming flowers could be had throughout the summer season, and until midwinter in this mild climate. I would not recommend planting them singly and isolated, as in such case they would be far less effective, and would, in many instances, not receive proper care; if planted here and there in groups upon the lawn, or intermingled with shrubs in the flower garden, they can not fail to produce very desirable features. I have frequently urged the planting of annuals, and, when doing so, I have been told quite frequently that the seed would not come up, or that the plants would not do well after coming up. I am willing to believe all that, but can not attribute the failure, in such case, to the climate, nor to the seed. The fault, in most cases, lies in improper treatment or neglect.

I will now give a few hints in regard to the planting of annual flower seeds. First prepare the soil well before planting. By preparing soil, I mean this: Clear the ground, intended to be sown, of weeds; give a top dressing of old rotten stable-manure, trench the ground at least spade-deep, pulverize the soil finely, and rake smooth. The seed may then be sown broadcast or in drills; if sown broadcast, a little fine, light, sandy loam mixed with a small quantity of very old manure may be sprinkled over the seed, so as to cover it to the depth of from one-eighth to one-quarter of an inch. My method, however,

differs from this; I sow broadcast, and then work the soil over gently with a rake; most of the seeds will thus be covered sufficiently with soil to insure germination. If sown in drills, I cover very lightly in the same way, as indicated above.

The proper time for sowing can not be given exactly; it depends very much on the state of the weather. In most localities of California, March and April are favorable months. If the seed is sown too early, the coldness of the ground and the frequent rains are likely to injure seeds, if they are ever so fresh and sound. Many varieties of annuals should be raised in boxes covered with glass, and transplanted after having made four or five leaves; but some do not bear transplanting well, and should be sown where they are desired to grow and flower. But the great secret of successful growing of annuals, is the judicious treatment of the young plants after they are up. The soil requires to be kept loose by frequent hoeing, and to be kept clean of weeds. While the plants are young, the weeds should be pulled out with the hand, but as they grow up and are thinned out to proper distances, they should receive frequent hoeing. If artificial irrigation is required, it should be done very carefully, the young plants being tender, and apt to be washed out.

I will now name a few good varieties, worthy of a place in every garden:

Aster (German Aster), is one of the most desirable annuals, of easy culture, and producing very showy flowers of blue, white, red, and other colors and shades. Asters remain in bloom for a long time, and are the favorities of gardeners and amateurs in Europe. I have cultivated them here with very good success. I prefer sowing the seed in April, where the plants are expected to remain. The different varieties now under cultivation are almost endless: Truffaut's Pæony-flowered, Pyramidal-flowered, Chrysanthemum-flowered, new Rose-flowered, are some of the best.

Balsams are an excellent class of annuals, much favored by every European and Eastern florist or amateur. Balsams may be either raised in boxes and transplanted, or they may be sown in the ground, where they are expected to remain. The Camellia-flowered and the Rose-flowered are considered the best. If properly treated, Balsams will grow to the height of two or three feet, literally covered with flowers. A very effective, and, at the same time, a very graceful plant.

Candytuft, both white and purple, are very desirable annuals, flowering in great abundance throughout the year. If they are expected to bloom during summer, they should be planted early (February or March will do well); if they are wanted in bloom in mid-winter, or early spring, the seed should be sown in autumn; say, August or September.

Cockscomb (Celosia) is another of these effective and bright annuals, which meet with general favor everywhere.

Delphiniums (Larkspurs) are hardy annuals of great beauty; they flower very abundantly, and make a handsome appearance, if grown in groups by themselves. They grow about two to three feet in height. The prevailing colors are pink, blue, white, and variegated.

Phlox Drummondii cannot be surpassed by any other annual. The flowers are of very brilliant colors, and, if planted in masses or groups, they produce a very striking effect. The seeds may be reared in pots or boxes, for transplanting, while young. I prefer sowing the seed in the open ground,

and letting them remain there for flowering.

Stocks (Stock Gilly) are well-known favorites, deliciously fragrant, and they bloom uninterruptedly during the first year, until late in winter. The colors are white, red, blue, brown, carmine, and purple of various shades. What are known as Winterstocks, will not bloom during the first year, but continue, under favorable circumstances, to flower for two or three years in succession. The flowers come double or single; the double-flowering varieties are considered the most valuable. The seed may be sown in pots or boxes, under glass, and transplanted, or it may be sown in the open air, to remain where planted; both ways are practiced.

The *Zinnia* is fast becoming one of the most popular of annual flowers. Mr. James Vick, speaking of it in his excellent catalogue lately published, says: "A splendid large plant and beautiful flower; as double as the Dahlia. It is perfectly adapted to our climate, will thrive in any good soil, and may be transplanted as safely as a Cabbage-plant. Seeds may be sown under glass early in spring, or in the open ground, as soon as the danger from frost is over. Transplant when small."

Not being able at this time to describe more of these valuable annuals, I merely mention the following as very desirable: Portulacca, Nemophila, Oenothera, Marigold, Morning Glory (climbing), Lobelia (not strictly annual), Calliopsis, Mignonette, etc.

There are many other flowering plants which bloom during the first year, such as Pansy, Petunia, Scabiosa, Verbena, etc., but they are not considered annuals, and will do well with us for a number of years.

I most sincerely hope that the time is not far distant, when the barren places of our flower gardens will be filled with some of the best annuals, and thus give greater variety, and present a more pleasing appearance.

CULTIVATING FLOWERS.

Most, if not all flowers, succeed best in sandy loam, made rich by the addition of well rotted manure, which should be thoroughly mixed with the soil. Such a soil, thus prepared, will not become hard or baked, but will remain loose and porous. It will not only afford the small and tender plants chance for existence, but it will also enable them to perfect themselves with vigor and beauty.

If your garden is composed of a stiff, heavy soil, a good dressing of sand and manure will assist it wonderfully in the way of plant development; and some of the most delicate plants that would not succeed at all in such soil, in its unimproved condition, will, after such preparation, flourish in the most satisfactory manner.

A heavy soil is greatly benefited by being roughly spaded up in the fall, and remaining in that condition through the winter. In all cases, before sowing the seed, it is of the utmost importance that the soil should be thoroughly pulverized. This important particular should never be overlooked.

Seed should not be sown too early in spring—not until sufficient warmth and dryness has been imparted to the soil. When these requisites are overlooked, and the seed is sown too early, it is apt to perish. When the soil will spade up mellow, crumbling to pieces when struck with the spade, it is in proper condition to be worked.—*Briggs' Illustrated Catalogue.*

ARBUTUS — STRAWBERRY-TREE.*

BY E. J. HOOPER.

Dr. A. Kellogg's interesting and enthusiastic remarks on the Madroña-tree, have led us to think of a variety of the same family of beautiful shrubs, which we remember when a boy, in our family garden in England. This species, which we so readily call to mind, was the most common one then in Europe—the *A. unedo*. The tree we refer to was trimmed so as to be nearly globular in its form, and nothing we thought could exceed its beauty in the autumnal months, when it was covered with both flowers and ripe fruit; the latter closely resembling a scarlet strawberry. These trees grow naturally in Italy, Spain, and also in Ireland, and are now very common in European gardens. They are tolerably hardy in most parts of Europe, and are seldom injured, except in extremely hard winters, which often kill the young and tender branches, but rarely destroy the trees. They would, of course, flourish well in California. But, while we have so splendidly fine and noble a sort here as the Madroña or *A. Menziesii*, we hardly need any of the other varieties of Arbutus. Both these kinds, at any rate, are fine objects for planting singly upon grass plats, or in groups in shrubberies. We had a grand sight of great numbers of Madroñas, with their brilliant scarlet berries, contrasting most strikingly and beautifully with their polished and glistening green foliage, on the Pacific Railroad this winter, while descending from the Sierra Nevada into the Sacramento Valley. What a delightful sight and change this was after passing over the snow-clad mountains and plains, which we had so lately gazed on.

*Natural Order, *Ericaceæ*.

For growing the Arbuti, sandy loam, or loam and decayed vegetable matter, suits them best, and they are said to be readily increased by layers. But plants are most successfully raised from the seed; the only objection being that this process is so tardy, as almost to deter men from taking the trouble. The taste for these lovely shrubs, however, is now likely to increase, and we know where plenty of the seed has been sown, and plants will soon follow, small as they will be at first for some time.

We may add that the berries of the Arbutus are edible, though not agreeable. When eaten in quantities, their fruit is said to be narcotic. A wine is made from it in Corsica, but it has the same property as the fruit. In Spain, both a sugar and a spirit are obtained from it. The bark and leaves of the same plant are used as astringents; in some parts of Greece, they are employed in tanning leather.

SPONGE FISHING.

From the account given by Vice Consul Green, of the Tunisian sponge fishery, in his report to the Foreign Office, which has lately been issued, it would seem that to fish for sponges requires as much if not more skill than to fish for salmon. The sponge fishery is most actively carried on during the three months of December, January, and February, for at other seasons the places, where the sponges exist, are overgrown with sea weeds. The storms during November and December, destroy and sweep away the thick marine vegetation, and leave the sponges exposed to view. The fishery is divided into two seasons, namely, summer and winter; the former commencing in March, and ending in November, and the latter as noted above. But the collection of sponges

is not very productive in summer, as it is confined to the operations carried on with diving apparatus, which can only be used on rocky and firm-bottomed places, or to the success of native fishermen, who wade along the shores and feel for sponges with their feet among the masses of seaweed. The sponges thus collected by the Arabs are also of an inferior quality, owing to the small depth of water in which they have grown. As, nevertheless, calm weather and a smooth sea are essential for the success of fishermen, the winter season, although lasting three months, does not generally afford more than forty-five working days. The Arabs, inhabitants of the coast; Greeks, principally from Karnidi, near Nauplia, (Napoli de Roumania), and Sicilians, are chiefly employed in the sponge fishery; the Greeks, however, being the most expert fishermen, while the Arabs are the least skillful. Sponges, says the *Pall Mall Gazette*, are obtained by spearing with a trident, by diving with or without the assistance of any apparatus, or by dredging with a machine somewhat similar to an oyster-dredge. The Arab fishermen, principally natives of Markenah and Jerbah, employ boats called sandals, manned by from four to seven persons, one of whom is the harpooner, while the others manage the sails, etc. The spearman watches for the sponges from the bows of the sandal, and the boat is luffed round on his perceiving one, so as to enable him to strike it. The depth of the sea in which the Arabs fish is from fifteen feet to thirty-five feet. Although the Greeks are the most expert divers, the majority of them use the spear. They employ small and light boats, just sufficient to carry a spearman and an oarsman. The boat is rowed gently along, while the spearman searches the bottom of the sea by means of a tin tube of fourteen inches in diameter by nineteen inches in length, at one end of which is placed a thick sheet of glass. This tube is slightly immersed in the water, and enables the fisherman to view the bottom undisturbed by the oscillations of the surface. The spears used by the Greeks are shorter than those employed by the natives or Sicilians, but with wonderful adroitness they are enabled to reach sponges covered by sixty feet of water. They hold in their hands from three to four spears, and dart them so quickly and with such precision, one after the other, that before the first has time to disappear under the surface, the second strikes its upper extremity, and thus gives it additional impetus to reach the sponge aimed at. The Sicilians, also, fish with a spear and in small rowing boats, but do not understand the employment of the tube, and have not acquired the knack of the Greeks in using three or four spears; they consequently seldom secure an equal number of sponges, although they are always more successful than the Arabs. The produce of the fishery is, it is stated, susceptible of considerable augmentation by an increase in the number of fishermen, and a new sponge is reproduced within a year wherever one has been removed.

Cinchona in Bengal.—In 1862, Dr. T. Anderson began the cultivation of *Cinchona* (the tree that yields the Peruvian bark), in Sikkim, Bengal. The venture has proved profitable, and, at the present time, he has under cultivation Cinchona trees of three species, to the number of 1,707,115, yielding about 300 pounds of bark per acre. Besides this, he has 480,000 young plants in nursery.—*Popular Science Monthly.*

BOTANICAL AND ZOOLOGICAL FARMS.

BY DR. A. B. STOUT.

It may please your readers, and encourage the zealous in behalf of agricultural progress, to learn the efforts that have been made, and are still faithfully urged, to foster that interest. Several years since a proposition was made before the American Medical Association to introduce the culture, as an experiment, of the Cinchona-tree in the different States of the Union. The reason therefor was, the scarcity and high cost of that invaluable drug, quinine. The same proposal having been introduced before the State Medical Society, of California, some three years since, the subject was referred to a committee. It at once became apparent to that committee that the experiment in California, as a subject of special legislation, would be a horticultural improvement of too slow growth to obtain attention, where quick harvest and great profits were essential to prosperity. The committee, therefore, determined to enlarge the programme, and endeavor to found an institution worthy the creative greatness of California.

The following Act, presented before the Legislature in 1872, was the result, and was favorably regarded. It had many friends, but, unfortunately, was introduced at too late a date to receive full consideration.

AN ACT *to Create and Establish a State Botanical and Zoological Farm for the Experimental Culture of all Desirable Plants of Foreign or Indigenous Growth, available for Economic Purposes; for the Cultivation of Knowledge in Zoology, and for the Foundation of a Public Thermal Sanitarium for the Cure of Chronic Maladies.*

PREAMBLE.—At the meeting of the Medical Society of the State of California, October 19th, 1870, this interesting subject was first introduced to the public attention. A memorial to Congress on the cultivation of the Cinchona-tree in the United States (by the American Medical Association) was presented to the Convention. A committee was appointed to address the Legislature of California, and petition that honorable body to appropriate suitable lands for the purpose. Doctors A. B. Stout and T. M. Logan were the committee selected.

The following year, Oct. 11th, 1871, at the annual meeting of the Medical Society of the State of California, Dr. Stout of San Francisco, from the committee previously appointed, made the following report on the raising of Cinchona, which was accepted and referred to the Committee on Publication:

The committee on this subject report that during the year no facilities have offered which could be used to promote the cultivation of the Cinchona-tree in California. The committee, however, report progress, and ask for further time. The project is entertained that this well approved subject may be availed of to obtain through legislative action the appropriation of lands, not only to try the cultivation of the Cinchona-tree, but for the experimental culture of any other desirable plant; or, in other words, the foundation of a State Botanical and Zoological Farm. Such an appropriation would render a permanent service and honor to the State, while the care and expense devoted to the one single object might be lost by the failure of the experiment. For such an appropriation a magnificent botanical garden might be created. Associated with a State sanitary institution and thermal resort for chronic diseases, it would form a new and superb institution. Forming, as it would, the permanent residence of several competent physicians, botanists, and naturalists, this would secure for it efficient superintendence, while oftentimes the voluntary labor of many grateful convalescents, or other persons infirm from various causes, would diminish the expenses. In this prospect, your committee respectfully asks to be continued.

ARTHUR B. STOUT,
THOMAS M. LOGAN.

The committee was continued accordingly.

Should the bill introduced Februry 23d, 1872, before Congress, by Senator Morrill of Vermont, for the support of Agricultural Colleges, be adopted—"The support of Agricultural Colleges. Washington, February 23d. A bill introduced by Senator Morrill, of Vermont, today was referred to the Committee on Education and Labor, appropriating to each State in which Agricultural Colleges have been established in accordance with the law of 1862, one million acres of public lands for their further endowment and support. No mineral lands are to be taken under this Act"—then would the cession of land be sufficient *to establish four Agricultural Colleges in as many different regions of the State*, so that their benefits would be fairly distributed.

The establishment of these collegiate farms with botanical gardens for experimental horticulture and sanitary objects, would necessarily become points of attraction for farming settlers in their vicinity, and thus every such endowment would become an important centre of progressive civilization and wealth in the State.

As the bill of Senator Morrill proposes the

cession of one million acres, abundant funds will accrue for the support and development of the collegiate farms; for if ten thousand acres were allotted to each farm, in all forty thousand acres, the remainder sold or leased would become yearly an increasing value.

The advantages in a sanitary point of view, in promoting public health by the suppression of contagious diseases and preventing hereditary transmission, are manifest. This sanitary question is now one of legislative solicitude. The addition of a public sanitarium for chronic diseases, with the use of thermal springs and public baths, would in no wise interfere with the agricultural and educational objects in contemplation. Their presence, on the contrary, would give an additional value and interest, and invite a larger influx of interested parties to the district. Ample space for all these objects exists in these large tracts to permit the various departments to be isolated. The following quotation from page forty-nine, article "Social Evil," in the first biennial report of the State Board of Health, 1870 and 1871, explains the merits of the subject:

"The great diminution in the amount as well as the virulence of venereal maladies in the present, as compared with the ancient times, and the power exercised over the disease, as well on its primitive forms as on its hereditary transmission, by medical treatment, evidently allows the inference that still greater mitigation of the evil may be effected.

"The squalid poverty and filth of former ages no longer exist in our favored country. In a comparative view the poor of our country are all rich. But yet reformative legislation may very much accelerate the progress of improvement. To this end the establishment of hygienic institutions to which the afflicted may easily resort, without the necessity of a record or register of their affliction, will render benefit. The disgrace and secresy which accompany contamination contribute immensely to prolong and intensify the evil, and very few are willing to make a public record of a mortifying fact. Let, then, the cure be made as private for the indigent as the rich. In large towns hospitals and dispensaries should be opened, of easy access to all parts of the place; and in counties, a County Physician, with an ample salary, should visit through the county, whose services would be free to the poor. The magnificent public baths of ancient Rome are an institution which would do honor to our philanthropic age.

"It was, perhaps, this very matter that led the statesmen of that epoch to call them into existence. The religious orders of those times were clever enough to convert to their uses the thermal springs of their respective countries, and by investing them with the idea of divine visitations, won the merit and the profits of divine cures."

If, then, the Legislature would appropriate some thermal springs of acknowledged efficiency and devote them to public use, with free accommodations for the indigent, and as a State hospital to which the poor sick of the State might resort at a very low cost, or for nothing, and even in extreme cases give free transport to the locality, more absolute relief and benefit would be done to the State than by direct legislation against the "social evil."

At present such resorts are occupied as private property, and are only accessible to those who have ample means to pay for their enjoyment. Therefore,

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. Public lands, in area —— acres (taken from the lands of the State of California, or obtained from the public lands of the United States in California by the petition of the State to the United States for the said appropriation), shall be set apart, applied, and surveyed for the aforesaid objects of public utility and philanthropy.

SEC. 2. Said lands shall not be necessarily limited to one continuous tract; but to obtain the benefit of the different zones of climate and the different soils, altitudes, and thermal waters of the State, they may be located in four different nearly equally divided sections, and four differently selected districts.

SEC. 3. Five Trustees, to consist, first, of the Governor; second, a member of the State Medical Society to be appointed by the Governor; third, the State Geologist; fourth, the Secretary of the State Board of Health; and fifth, the Superintendent of Public Instruction, shall carry out the object of this Act, take charge of the lands appropriated, appoint managers and superintendents, and lease to such farming families as will agree to promote the general plan.

SEC. 4. Said five Trustees shall hold their commissions for four years, and their acts shall be subject to legislative confirmation.

EXTRACT FROM THE TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA, IN OCTOBER, 1872:

REPORT *of Committee on Cultivation of the Cinchona-tree, and the appropriation of Public Lands for Botanical Farms, Zoological Collections, and the use of Thermal and other Mineral Springs in Chronic Diseases.*

The interest the committee takes in the subject committed to its care, is unabated. This important and interesting question now depends upon the action of Congress upon the bill introduced by Senator Morrill, of Vermont, proposing to donate large tracts of lands for these purposes in every State. We have, therefore, to endure the delays dependent upon this action, which it is proposed to urge with new vigor when Congress shall again convene. As further evidence of the great value of this enterprise, we submit the following essay of Robert E. C. Stearns, member of the California Academy of Sciences, on the cultivation of certain Australian forest trees in California.

A. B. STOUT, M. D.,
THOS. M. LOGAN, M. D.

[The essay of Prof. Stearns, on the Australian forest trees, has appeared in previous numbers of this magazine.]

The preamble of this bill, introduced by Mr. Comte, gives an ample explana-

tion, and shows the phases through which the general idea has passed, and is in full way, we hope, to obtain ultimate success.

The bill of Senator Morrill, of Vermont—a bill whose scope is so truly national and philanthropic—has already passed the Senate, and only awaits the confirmation of the House of Representatives.

The plan of the bill, if we mistake not, is to sell 1,000,000 acres of United States lands at the Government price, and supply, from the accruing funds in the United States Treasury, the sums necessary to inaugurate the agricultural colleges. The interest on the balance to be divided *pro rata* among the States for the further support of the colleges.

Now is the moment for the friends of agricultural science and natural history to extend their influence and persuasion to obtain the final passage of this admirable bill. The name of Morrill will be gratefully associated in the mind of every land-holder in the nation. Education in agriculture has now become as indispensable to the farmer, as it is in all other departments of industry. Hereditary experience and oral instruction no longer suffice, important as they may be to success in farming. The evening discussions around the big stove in the country inns, are the principal lectures heard on husbandry, and the town hotels are our agricultural colleges; that is, when the politicians give the farmers a chance to talk—and then the fermented product of the grain crop is the chief inducement to the exchange of opinions.

The question will naturally arise, Should all this fine endowment be granted to one agricultural college—the present existing institution? The great extent, and the variety of soils, climate, and altitudes in California, render this State exceedingly favorable for the introduction and cultivation of all the great commercial products; and this circumstance favors the division of the land into at least four great farms, each with its college, board of trustees, and general organization. The more cultivated minds can be induced to devote their energy to the work, the more will the students, and practical young farmers flock to their schools and fields. And a generous rivalry will stimulate them all.

How grand the picture on the mind of all these model farms, in their various details and departments, in full operation; and when each graduate may write "What I know about Farming," with honor to himself, and benefit to his State.

DRYING OF FRUITS.

The following valuable remarks relative to the drying of fruits, etc., were communicated by Mr. Wm. M. Haynie and others at a meeting of the Sacramento Farmers' Club:

Mr. Haynie gave an account of his experience in curing Raisins and Figs in his hop-house:

The hop-house is provided with a set of boxes with wire-cloth bottoms, and some twelve or fifteen feet below these boxes are a couple of large stoves or furnaces so arranged that the smoke passes off by pipes outside of the building, while the cool air passes in at openings at the bottom of the building, and being heated by the furnaces, passes up through the wire-cloth and Grapes, and out at ventilators at the top of the building, the walls of the building being battened and caulked very close. The fire was kept up during the daytime and allowed to cease during the night, so that the Grapes had been sub-

jected to the heating process about twenty hours. The committee exhibited some samples of dried Grapes of each variety, and some of the Figs. The Los Angeles Grapes were, some of them, dried about right, and others were still soft or green, the curing being somewhat uneven. The White Muscat Grapes were still quite soft and more imperfectly dried, while the Figs were pretty fairly cured. But the heat had evidently been raised too high, the Grapes having the taste of being somewhat cooked.

The committee were entirely satisfied from the experiment that making Raisins by artificial heat could be made successful, practically and financially, but wire-cloth to lay them on was objectionable. A better way would be to suspend them, or lay them on some material which was a non-conductor of heat. Wherever the fruit came in contact with the wire it was cooked. They also thought the heat should be generated outside the building, and forced through the fruit in the form of heated air.

Mr. Johnston said: You can't force the drying of Grapes; there was no reason for constructing houses in which to cure Grapes when they could be successfully cured on the vines and gathered in the form of Raisins.

Mr. Aiken said: Grapes do not dry evenly on the vine. While some of the berries on the same bunch dry to a crisp, others remain green.

Mr. Rutter agreed with Mr. Aiken. He has White Muscat Grapes of the first crop still hanging on the vines, and still as green as ever.

Mr. Manlove: It is easy to account for the opinions of Aiken and Rutter. Aiken's vineyard is on the river bottom, low land, and is covered with sand, which causes some of the Grapes exposed to the reflection of the rays of the sun to scald and crisp, while those not so exposed are, by the natural dampness of the surrounding atmosphere, kept from drying at all; while Rutter irrigates his vineyard, and keeps the sap running in the vines and to the Grapes. He (Mr. Manlove) has 100 vines of White Muscat Grapes evenly and successfully converted into Raisins, and now hanging on the vines and ready for picking and packing. His vineyard is on clay or adobe soil, which, when not irrigated, absorbs the heat of the sun in the daytime and retains it in the night, thus keeping up the drying process of the Grape. He had formerly dried all his fruit on scaffolds, but he had been taught by a Greek who had worked for him that the ground was better, as it is certainly much cheaper. When gathering his Muscat Grapes for the market, he made a practice of assorting them, throwing the unmarketable bunches on the ground between the rows. Here they are allowed to remain until cured, when they are gathered up and packed as Raisins, and he sells them at from 13c. to 15c. per lb. The expense of curing being nothing, he had found this practice to pay. Grapes, or any other fruit, will dry one-third faster on the ground than on boards, and better. A clay or adobe soil is the best, because it does not become so hot under the rays of the sun as to scald the fruit, while it retains the heat longer when the sun disappears.

Mr. Johnston said: This is the mode of drying Figs and Grapes on the Mediterranean, and is undoubtedly the cheapest, and perhaps the best. It is sometimes practiced to send heat through under dirt scaffolds by means of furnaces constructed something after the style of the furnaces under brick kilns. This secures the continuance of the heat during the night, and takes advantage of all the heat of the sun in the day, at

the same time; and he thinks it questionable whether any drying-house can be made that will be as economical and effective in this country as the method suggested.

Fruit-growers in California in general say that drying fruit will not pay. The reasons they give are that they have no convenient way to facilitate the work of drying, and the labor is too high to dry fruits in the ordinary way of sun-drying. He recommended the erection of drying-houses heated by pipes, from an ordinary furnace or stove constructed for the purpose, or otherwise by kilns with a surface constructed, say twelve feet by twenty, and the furnace draft underneath. This kind of kiln can be constructed of brick or stone, and is well adapted for the quick drying of all kinds of fruits. Such kilns are used for drying fruits in the States of Pennsylvania and Ohio.

The advantages of kiln-drying are apparent from the fact that the acid of the fruit is retained, and the saccharine properties of the fruit undergo no fermentation; only the vegetable and water substances are evaporated, leaving the fruit with all the solids and excellent flavor belonging to the juices of their several kinds. Such drying-kilns can be constructed to last any length of time by being covered from the weather, and would be more convenient and economical than drying-houses—they turn out better dried fruit. To make a good quality of dried Apples, they must be cut or sliced when in the ripening state, but not fully ripe. The same will apply to the Peach, Plum, Pear, and the smaller fruits. When dried sufficiently for keeping they should be immediately and compactly packed in boxes of suitable size, especially in California, in order that the fruit may not undergo the changes in our climate from humid to dry, which tend to mold and change the flavor.

In drying Figs, he believed the out-door surface-drying kiln would be the best. The Smyrna and Sicily Figs are dried upon a smooth surface of hard clay, as also under glass in houses constructed for the purpose. So are the beautiful layers of white Malaga and blue Portugal Raisins. The Zante Currants are dried upon fire-kilns and in ovens constructed for the purpose, at a temperature of heat not exceeding eighty degrees. The German and French Prunes are dried in clay ovens similarly constructed. All of the imported fruits are similarly dried, and the condition and appearance they come in prove conclusively that they are cured by fire heat. This should teach us all to abandon the lazy system of sun-drying, and stimulate us all to adopt the fire system. There is no country upon the face of the globe that produces better qualities or varieties of fruit for drying than California, and this business can be made a great source of wealth and one of the leading economies of the farmer.

THE HARD AND ORNAMENTAL WOODS OF THE PACIFIC COAST.

BY C. A. STIVERS, M. D.

Living in a new country as we are, and surrounded to a certain extent by new conditions of life, it is our duty to foster and develop all that shall make us prosperous and wealthy. Not alone are we to unfold the hidden treasures of our own State, but also those of adjoining States and countries.

It can be truly said, that to us belongs the general prosperity of the entire Pacific Coast, and, if we wish to erect an empire of commercial greatness for ourselves, and for those who are to

follow us, it must be done by reaching out on all sides, and drawing to us the materials of wealth, which are at present lying unnoticed and unutilized.

California stands in the current-way of (we may almost say) the world's commerce, and it is only necessary to so direct the streams, as that they shall flow through her; receiving, as they must, an increased impetus from her aid and knowledge.

With these facts before me, and also with a view of bringing into notice a branch of commerce which is but developing itself on this coast—that in *hard and ornamental woods*—I have thought a few remarks in your journal would not be out of place. In using the title of "Hard and Ornamental Woods of the Pacific Coast," I have done so for the purpose of including all woods of that description found growing adjacent to the coast, and reaching from Behring's Strait on the north, to the Bay of Panama on the south. Commencing at the southern point of this timber belt, and passing north through Central America and Mexico, we meet with a large number of valuable woods already known to commerce; while there is every reason to believe that there are many others equally valuable, which have as yet been unutilized.

The most common hard woods received from this southern part of the timber belt, are those known to commerce under the general name of "Spanish Cedar" (natural order, *Cedrelaceæ*). While all these belong to the same general class, they are still divided into many varieties, marked by differences in color, texture, and grain. Those growing in Nicaragua (small lots of which have, at various times, been imported), like the Cedars in general of Central America, are finer in texture, and more beautiful than those in Mexico—a variety from Tiger Island (a small island in the Gulf of Fonseca), being as hard and fine as the best Mahogany. Unfortunately, this island has been almost stripped of these valuable trees.

Central America also furnishes an exceedingly hard wood called "*Amapa prieta*" (local name), which resembles the Black Walnut in some degree, but is of much greater density, and somewhat lighter in color. Small lots have been imported, and used in cabinet work, for which it is well fitted on account of its great hardness.

Nicaragua, more especially, grows the "*Carretta*" (another local name), which seems to be but a variety of the preceding, and has often been mistaken for Walnut. Its principal use has been in small carvings, and for ship purposes; small quantities having at times been imported for use at the Navy Yard.

Another valuable wood also comes to this port, chiefly from Nicaragua, called "Fustic" (*Morus tinctoria*). At present its principle use is that of a dye-wood, producing a clear, fine, yellow stain. The wood is of a light and exceedingly handsome yellow color, close grained, and capable of receiving a high polish.

As we advance north into Mexico, the Cedars are more plentiful, but are somewhat softer than those found growing further south; this quality is, however, a gain rather than otherwise; as the soft Cedars of the west coast of Mexico are highly esteemed in the Eastern States; prices having advanced to such a rate as to allow of a number of shipments being made from this port to New York by steamer, at a fair margin of profit. Their principal use is for cigar boxes, stair and cabinet work. Mexico has also the pencil Cedar growing on the west coast, but

the exact locality is at present unknown to me.

Besides the Cedars, Mexico furnishes a great variety of other hard and ornamental woods, small shipments of which have, from time to time, been received at this port.

The "*Haba*," a dense, hard wood, is spoken very highly of by ship-carpenters, as being well adapted for their work.

The "*Primavera*," or white Mahogany, is an exceedingly fine cabinet wood; hard and dense, of great durability, and susceptible of a fine polish. It is also well fitted for ship-work. Of Rosewoods, there are two varieties; the red and black. The red Rosewood is a kind of bastard wood, somewhat like the true Rosewood, but lighter in color, and much softer in texture, while the black is in all respects equal to the Rosewood of South America.

"*Linole*" (natural order, *Aurantiaceæ*,) (?) is rather a soft wood, but with a very pretty and curious figure. Its principal value is in its perfume, resembling somewhat that of Bergamot. It is used in the manufacture of fancy boxes and caskets.

"Lignumvitæ" (*Guaiacum officinale*) is also found growing in large quantities in Mexico, and is in all respects a valuable and desirable wood. Its hardness and durability are well known. It is used in ship-building where a very hard wood is required, as in the case of block and pulley wheels. It is also employed in medicine, in the form of tincture, infusion, etc.

In addition to the woods already mentioned, there are Oaks of various kinds and qualities to be found along this Pacific timber-belt; the *Quercus Skinnerii* being one of the most valuable. At present, the country is so undeveloped and in such a condition, that there are no great facilities for getting these woods to points of shipment. But if their value is only demonstrated, there will soon be such a demand, as to induce an active interest to be taken in this branch of commerce, by both the people and the government.

I shall, at a future time, continue this article by enumerating and describing the hard and ornamental woods of the northern portion of this timber belt, reaching from Mexico through California, Oregon, Washington Territory, British Columbia, and Alaska.

SELECT PLANTS

(Exclusive of Timber Trees) readily eligible for Victorian Industrial Culture, with Indications of their Native Countries and some of their Uses—an Enumeration offered

BY BARON FRED. VON MUELLER.

[Continued from page 10 of January number.]

CALAMUS MONTANUS, *T. Anderson.* — Himalaya, up to 6,000 feet. A hardy climbing palm. The aged canes are naked. "The light but strong suspension-bridges, by which the large rivers of Sikkim are crossed, are constructed of this palm. It supplies material for the strongest ropes for dragging logs of wood from the forests. The most durable baskets and the cane-work of chairs are manufactured from the slit stems. Walking-sticks and riding-canes made of this species are exported from Sikkim in considerable quantity." Many other Calami serve similar purposes, but probably few or perhaps none are equally hardy.

CAMELINA SATIVA, *Crantz.*—Middle and South Europe, temperate Asia. An annual herb, cultivated for the sake of its fibre and the oil of its seeds. It is readily grown after corn crops, yields richly even on poor soil, and is not attacked by aphis. Mr. W. Taylor obtained 32 bushels of seeds from an acre,

and from these 540 lbs. of oil. The return is within a few months.

Canna Achiras, *Gillies.* — Mendoza. One of the few extra-tropical of Cannas, eligible for Arrow-root culture.

Canna coccinea, *Roscoe.*—West India. Yields with some other Cannas the particular Arrow-root, called "Tous les mois."

Canna edulis, *Edwards.*—The Adeira of Peru. One of the hardiest of Arrow-root plants, and thus well adapted for our clime. Seeds, even if many years old, will germinate. This species has yielded excellent starch at Melbourne, Western Port, Lake Wellington, Ballarat and other localities, from plants supplied at the Botanic Garden. The Rev. Mr. Hagenauer, of the Gipps Land Aboriginal Mission station, obtained 220 lbs. of Arrow-root from one-eighth of an acre of this Canna. The gathering of the roots is effected about April. The plants can be set out in ordinary ploughed land. Captain James Hall, of Hastings, prepared also largely the starch from this root. Starch grains remarkably large.

Canna flaccida, *Roscoe.* — Carolina. Probably also available for Arrow-root, though in first instance, like many congeners, chosen only for ornamental culture.

Canna glauca, *Linne.* — One of the West Indian Arrow-root Cannas.

Cannabis sativa, *L.* * — The Hemp-plant; indigenous to various parts of Asia, as far west as Turkey, and as far east as Japan. Cultivated for its fibre, since ancient times. Particularly in hot climes it exudes the "Churras," a resinous substance of narcotic intoxicating property. The foliage contains also a volatile oil, which the seeds yield by pressure—the well-known fixed Hemp-oil. The staminiferous plant is pulled for obtaining the fibre in its best state immediately after flowering; the seeding plant is gathered for fibre at a later stage of growth. Good soil, well drained, never absolute dry, is needed for successful Hemp culture. Hemp is one of the plants yielding a full and quick return within the season. The summer temperature of St. Petersburg (67° F.) and of Moscow (62° F.) admit yet of the cultivation of this plant.

Capparis spinosa, *L.* — South Europe and North Africa. A somewhat shrubby and trailing plant, deserving even for the sake of its handsome flower a place in any garden. It sustains its life in the most arid deserts. The frosts of our lowlands do not destroy this plant. The flower-buds and young berries preserved in vinegar with some salt form the Capers of commerce. Samples of Capers, prepared from plants of the Botanic Garden, are placed in our Industrial Museum, together with many other industrial products emanating from the writer's laboratory. A closely allied and probably equally useful plant, Capparis nummularia, is indigenous to Northern Australia. The Caper-plant is propagated either from seeds or suckers; it is well able to withstand either heat or drought. The buds after their first immersion into slightly salted vinegar are strained and afterwards preserved in bottles with fresh vinegar. Chemical principle: Glycosid.

Capsicum annuum, *L.*—Central America. An annual herb, which yields the Chillies and thus also the material for Cayenne Pepper. Chemical principle: Capsicin, an acrid soft-resinous substance.

Capsicum baccatum, *L.* — The Cherry-Capsicum. A perennial plant. From Brazil brought to tropical Africa and Asia, where now other Pepper-Capsicums are likewise naturalized.

Capsicum frutescens, *L.* — Tropical America. The berries of this shrubby species are likewise converted into Cayenne Pepper.

Capsicum longum, *Candolle.*—Some of the hottest parts of America. An annual herb, also yielding Cayenne Pepper. Our summers admit of the successful growth of at least the annual species of Capsicum in all the lowlands.

Carthamus tinctorius, *L.* — From Egypt to India. The safflower. A tall, annual, rather handsome herb. The florets produce yellow, rosy, ponceau and other red shades of dye, according to various admixtures. Pigment principles: Carthamin and Carthamus-yellow. For domestic purposes it yields a dye ready at hand from any garden. In India the Carthamus is also cultivated for the sake of the oil, which can be pressed from the seeds.

Carum Ajowan, *Benthan.* (Ptychotis Ajowan, *Candolle.*) India. The fruits of this annual herb form an excellent culinary condiment with the flavor of thyme. Its peculiar oil is accompanied by Cymol and Thymol.

Carum Carui, *L.*—The Caraway-plant. Perennial. Europe, North and Middle Asia. It might be naturalized in our Alps and also along our sea shores. The Caraway-oil is accompanied by two chemical principles: Barvon and Carvol.

Carum ferulifolium, *Koch.* (Bunium ferulifolium, *Desfont.*) A perennial herb of the Mediterranean regions. The small tubers are edible.

Carum Petroselinum, *Bentham.* (Apium Petroselinum, *L.*) The Parsley. The biennial well-known herb, indigenous to South Europe and the Orient. Essential oil peculiar with Stearopten.

Caryota urens. *L.* —India. One of the hardier Palms, ascending, according to Dr. Thomas Anderson, the Himalayas to an altitude of 5,000 feet, yet even there attaining a considerable height, though the temperature sinks in the cooler season to forty degrees Fahrenheit. The trunk furnishes a sago-like starch. This Palm flowers only at an advanced age, and, after having produced a succession of flowers, dies away. From the sap of the flowers toddy and palm-sugar are prepared, as from the Cocos and Borassus Palm, occasionally as much as twelve gallons of toddy being obtained from one tree in a day. The fibre of the leaf-stalks can be manufactured into very strong ropes, also into baskets, brushes, and brooms. The outer wood of the stem serves for turnery.

American Plants in Great Britain. —An English journal says: "The beautiful *Asclepias tuberosa* is, this season, producing freely its showy, bright, orange-colored flowers in several collections round London. This fine perennial thrives perfectly well almost anywhere, if planted in sandy peat." In the same journal we find the following notice: "One of the best hardy aquatic plants, in flower at the present time, is the North American Pickerel Weed, *Pontederia cordata*, a plant by no means so often met with as it deserves to be. It produces a stout spike of handsome sky-blue flowers from one and a half to two feet high. No ornamental water should be without this charming aquatic, which should, however, have a place near its margin."

Again: "The American Pitcher Plant, *Sarracenia purpurea*, is thriving as well as any native plant in the bog-garden in Messrs. Backhouse's nurseries at York, and by its side a healthy little specimen of the still more curious *Darlingtonia Californica* is beginning to grow freely."

The above extracts will show that many of our native plants find a better appreciation in foreign cultivation than they do in their own country. It is to be hoped that our gardeners and florists will give more attention to the introduction of native plants, whose merits have been overlooked because of their commonness.

CAMPHOR-WOOD.

The Camphor-wood boxes brought from China and the East are well known for their strong preservative odor, and are found useful in keeping away moths from woolens and furs. The China and Japan Camphor-tree belongs to the Laurel family, but that of Sumatra and Borneo is the *Dryobalanops camphora*. Even the leaves and fruit smell of camphor. In Sumatra this tree is abundantly met with on the west coast, chiefly in the extensive bush, but seldom in places more than 1,000 feet above the level of the sea. The tree is straight, extraordinarily tall, and has a gigantic crown, which often overtops the other woody giants by 100 feet or so. The stem is sometimes twenty feet thick. The Barus camphor of this island is the most esteemed of any, and it is for this drug, obtained in but small quantities —seldom more than half a pound to a tree—that it is ruthlessly destroyed. The tree, when felled, is divided into small pieces, and these are afterward split; upon which the camphor, which is found in hollows or crevices in the body of the tree—and above all, in knots or swellings of branches from the trunks—becomes visible in the form of granules or grains. An essential oil also exudes from the tree in cutting, which is sometimes collected, but is scarcely remunerative. On the west coast of Formosa there are forests of Camphor-wood, and a great deal of crude camphor is shipped thence to Amoy and other Chinese ports. Large quantities of the wood are sawn into planks. Tables and cabinets are then made of it, and it is also turned into platters and washing-basins. Only a small portion of the vast camphor forest of Formosa has been reclaimed from its wild inhabitants, and this consists of fine tall trees, the growth of ages. When a tree is felled, the finest part of the wood is sawn into planks, the rest chopped small and boiled down for the camphor.—*The Garden.*

HOW TO COOK MUSHROOMS.

Robert Morris Copeland contributes to the February *Atlantic* an article on "Edible Fungi," from which we take the following:

The treatises on fungi give many methods for cooking them to make them palatable, and most of the processes are so compound, and require so many additions of condiments, or spices, butter, etc., that a piece of sole-leather so cooked would probably be very good. The simplest method is the best for relish, and is an easy way of ascertaining whether any fungus which seems safe is flavorous enough to be worth eating. Peel off the outer skin, break out the stem, and set the cap top down on a hot stove. In the spot where the stem formerly stood put a little salt, and, if desired, a small bit of butter. Scatter some salt over the gills. When the butter or salt melts, the cooking is done; and as soon as it is cool enough the fungus should be eaten, carefully saving the juice. *Agaricus Campestris* cooked in this way, and eaten hot, will make one wish that he was all mouth and palate, and that his mouth might never be in want of a Mushroom.

This is the simple Irish way of cooking the Mushroom, and all its allies can be treated in that way. Some fungi which do not seem particularly delicious when thus cooked, will, when slowly stewed with a little butter, and flour dredged in, with salt and pepper, make most delicious stews.

The mushrooms *Cantharellus, Marasimus, Boletus*, indeed all of the fungi named, will stew together, and form a dish that, alone or as an *entree*, can not be surpassed in delicacy of flavor and gastronomic satisfaction.

Editorial Portfolio.

In another column will be found an announcement from the Secretary of the Bay District Horticultural Society, that a Floral Exhibition will be held at the Horticultural Hall, in the coming May. We hope that every endeavor will be used both by professional nurserymen and by our rapidly increasing community of amateurs, to render this a pleasing success. Spring is indeed the most appropriate season for such enjoyments.

Much care is necessary to make such fitting arrangements, that, while every exhibitor may have fair opportunity for display and contrast with his competitors, and a due protection for his property, yet that a general harmony of outline may be preserved; and that, while an artistic contrasting of color is effected, at the same time, that general blending and softening of tints which is so pleasing and refreshing to the eye, may pervade the whole exhibition.

In view of these requirements, we extract the following remarks from the *Gardeners' Chronicle* of the 4th of last January:

"We have always held, and we still hold, that no flower show will ever be what it ought to be, until some plan, by which the materials can be placed independent of their ownership, has been brought into working order; and then, as the adjudication must precede the arrangement, and the arrangement must precede the admission of the public, it becomes a necessity either that they should be judged over-night, or very early on the morning of the exhibition day. There are, of course, difficulties in the way of this, but they are scarcely insurmountable; for it would not be necessary to move all the objects which may be brought in. The first and second prize lots might very well remain intact, as groups of the particular objects of which they are composed; while third prize lots, and such as do not get prizes, together with some of the minor classes, might be broken up, and their component parts placed where they were most required. All that would be necessary to carry this out would be to devise a simple and practicable plan of marking the plants, so that there might be no disputes about ownership, and then to secure general acquiescence in the plan.

"What is wanted, and which we never get now, is a sort of continuity in the thread of arrangement—not the abrupt transitions we so often see: as, for example, a group of tall plants set down beside a group of dwarf plants, the two lots not harmonizing one whit more in character of leaves and flowers than they do in stature. The surface should form an easy flowing line, and, where possible, the outline of the plan of the groups also should be a graceful curve; but even in straight tents, and on linear stages, it would be an immense improvement if the objects could be graduated in size. Any marked subjects, such as the best grown Roses, or Pelargoniums, or stove and greenhouse plants, would form distinct and characteristic objects as prominent groups, and so would such things as Aloes and Agaves, or even the lowly alpines, if they were set at proper intervals, and the intermediate spaces were so filled out as to connect the one with the other. We are fully aware of the difficulties of carrying out all these suggestions, and also of the difficulties of working up a picture at all presentable

under present arrangements, for in the former case there must be a revolution of the whole system of staging; and in the latter case the unfulfilled engagements made in the shape of entries, and not complied with, coupled with the limited time which is available, utterly prevent anything but an arrangement of chance, which may or may not prove to be effective at certain spots, and which can never hope to reach to any high degree of effectiveness as a whole. To remedy this state of things, all that can be done at present is to keep the matter well before the horticultural public, with the hope that governing bodies may in time see their way to strike out a bolder policy, and that those who bring together the materials of which the shows have to be composed, may not prove obstructive as to the mode of carrying it out."

We have had many communications from friends, seeking information on the rudimentary steps necessary to initiate a garden, in a locality either not previously cultivated, or in a neglected condition, by an entirely inexperienced hand. Complaints are made that all books and codes of instructions in magazines, evidently presuppose some amount of knowledge and some previous preparation. Our friends seem to want their A B C. To gratify them, we have made arrangements for a series of short and concise articles on this subject; but they must learn to ask for what they want, and not be too lazy to do it. Write; and, if possible, answers will follow.

It is not generally known that the leaves of the coffee-plant are coming to be used like the berries, and in some coffee-growing lands, Java for instance, are preferred by the natives to the choicest berry for making the favorite decoction.

INFLUENCE OF FORESTS ON CLIMATE.

Meteorology is yet in a crude and undeveloped state, but experiment and research in that direction are constantly bringing out facts of permanent value. In Europe, where the denudation of forests has rendered these changes more apparent, investigations have been carried forward in the most careful manner. The following observations made by M. Mathieu, Professor in the School of Forestry, at Nancy, France, while they do not establish the theory of the effect of forests on climate, are valuable in that direction. They were reported by him to the Agricultural College at Nancy, in 1869, and include the first eight months of the year given, being made with reference to the points named, as follows:

1. Does the wooded condition of a country exercise an influence upon the amount of rain it receives?

The answer to this question was attempted by taking two stations at equal height above the sea, but separated between fifteen and twenty miles, the one situated in a wooded, and the other in a cultivated country, and observing the rain-fall. The result, reduced to inches, was, that at the agricultural station the rain-fall for the three seasons was 82.02 inches, and at the forest station, 93.13 inches; difference in favor of the forest station, 11.11 inches.

2. Does the covert of the forest, by intercepting the rain falling from the atmosphere, diminish to a considerable extent the amount of rain that reached the ground?

This was answered by placing rain-gauges beneath the trees, and in the open ground close at hand, and comparing results, which were as follows: In the open ground, 92.09 inches; under the trees, 87.74—excess in open ground, 4.35.

This shows that while some of the rain-fall in the forest does not reach the ground, still, by comparing what did reach it with the result at the agricultural station, we have 87.74 inches for the rain-fall under the trees, and 82.02 inches for the fall at the agricultural station, an excess of 5.72 inches in the forest.

3. What is the effect of a wooded country on the conservation of the moisture received by the soil?

The answer was sought from a comparison of the evaporation from two equal vessels, one placed in the forest, the other in the open ground. Evaporation went on five times as rapidly, taking the whole year into consideration, in the open ground as in the forest, ranging from three to six times between April and July. Eighty-five per cent. of the rain falling from the open field evaporated, while only 22 per cent. of that falling in the forest was lost.

4. What is the influence of forests upon temperature?

The experiments in this direction had been conducted but a short time, but go to show that the mean annual temperature in the woods is lower than in the open country, and that the difference is least in winter and greatest in summer. In 1868 the mean temperature of the forest was lower than that of the open fields by 4 deg. 35 min. in the morning, and 9 deg. 33 min. at night in July; which difference fell in December to 48 min. in the morning, and 49 min. at night. Again, the average variation in temperature was much greater in the open country than under cover of the forest, between day and night. It ranged from 05 min. to 8 deg. 57 min. in the open air, but only from 04 min. to 1 deg. 22 min. in the forest. —*Western Rural.*

REPORTS OF SOCIETIES.

Bay District Agricultural Society.—The Annual Fair of this Society will be held in this city at Agricultural Park, in September, commencing on Monday, 8th, and continuing six days, including Saturday, 13th. The Society are making extensive arrangements to make it one of the most attractive exhibitions ever held in the State.

FAIRS AND EXHIBITIONS.

Bay District Horticultural Society. The Horticultural Society has arranged to hold a Spring Exhibition, which will open on May 1st, 1873. This will be a novel feature, and has many excellent points in its favor. Although this will be chiefly a floral show, as announced by the advertisement on another page, it will be superior in many respects to an autumn exhibition. The foliage of plants and trees present a much fresher appearance when exhibited early in the season, and many varieties of flowering plants will be in full bloom by the 1st of May, which are a thing of the past in autumn. We anticipate a grand show; and if the florists, the nurserymen, and the amateur gardeners will participate more generally than has been the case at former exhibitions, it will prove the most attractive display of the kind we have ever had here.

An extensive list of premiums will be awarded to those children who received plants from the Horticultural Society during the exhibition of last autumn, and who shall exhibit them at the coming fair. Over two thousand plants have been given away, and if only one-fourth of them are in good healthy condition, they will form a very interesting feature in the exhibition.

Every one who feels any interest,

either direct or indirect, in the progress of Floriculture and Horticulture, should endeavor, by every means in his or her power, to make the enterprise a complete success, and an honor to the community. F. A. Miller, *Secretary.*

OUR EXCHANGE TABLE.

We have before us Nos. 1 and 2 of Volume II of what appears to us to be a very excellent serial, exclusively devoted to poultry. The illustrations are of more than ordinary merit, and the various articles, both original and selected, are replete with solid information on the specialty of this magazine, which should be in the hands of every poultry keeper. We wish we had the first volume on our own book-shelves. The *Poultry World* is published by H. H. Stodard, Hartford, Conn. Price, $1.25 per year.

The *Boston Journal of Chemistry*, devoted to the science of Home Life, etc., is evidently a very useful magazine, containing much valuable information. Published by Billings, Clapp & Co., 34 Oliver Street, Boston. $1 per annum.

The *Milwaukee Monthly*, is a very readable serial. Price, $1 per annum. Published by T. J. Gilmore, Milwaukee, Wisconsin.

American Farmer's Advocate, published at Jackson, Tenn. $1 per annum. National in its character, and worthy of support.

Live Stock Journal, a very excellent work on its specialty. Published by Haas, Kelley & Co., 191 Water Street, New York. Subscription, $2 per year.

The West, a very valuable monthly, devoted to the development of the region which its name typifies. Published by John H. Carmany & Co., San Francisco. $1 per annum. Replete with useful information.

Journal of the Farm. This is an illustrated rural and family monthly. Published by Daniel Baugh, Philadelphia. Terms, $1 per annum. Agricultural and horticultural intelligence, and also much useful and scientific information.

Gardener's Monthly. Published by Chas. H. Brinkloe, 314 Chestnut Street, Philadelphia. Subscription, $2.00 per annum. This is one of our most esteemed horticultural magazines, full of information and valuable suggestions.

Central Union Agriculturist. Published by Jeremiah Behm, Omaha, Nebraska. Price, $1.50 per annum. An excellent agricultural journal, full of useful matter, with less of the irrelevant than nine-tenths of its compeers.

CATALOGUES RECEIVED.

We are in receipt of *Wholesale Price List* of the Bloomington Nursery, F. K. Phœnix, Proprietor.

Also, *Wholesale Price List* of "Bryant's Nurseries," Princeton, Ill. A. Bryant, Jr., Proprietor.

We have to hand *Semi-Annual Trade List*, for Spring of 1873, of Hoopes Brother & Thomas, Cherry Hill Nurseries, West Chester, Pa.

We have received from Briggs & Brother, nurserymen, florists, and seedsmen, of Rochester, N. Y., their beautifully illustrated *Quarterly Catalogue.* This is a most interesting work, containing three finely colored plates and upward of 400 cuts of flowers, plants, etc. It is a most comprehensive catalogue, containing much valuable information, and got up in a truly artistic style on tinted paper. The quarterly series is offered for 25 cents a year,

with several other most enticing offers regarding seeds, etc., which can be studied out on obtaining the catalogue.

Vick's Illustrated Floral Guide, for 1873. This, also, is a very superior and highly decorated catalogue of plants, seeds, and bulbs, profusely illustrated, and accompanied with copious instructions and descriptions. This, too, is a quarterly, offered at 25 cents per annum for the four numbers, and suggests advantageous modes of arranging for the supply of seeds, etc.

FAVORS RECEIVED.

We have received two works on Bee Culture: *Annals of Bee Culture*, for 1872, price 50 cents, and *Progressive Bee Culture*, price 25 cents, which appear to contain much valuable information on the subject. We recommend them to the attention of all aparians. They can be obtained from the author and editor, D. L. Adair, of Hawesville, Illinois.

Also, *American Bee Journal*, for January, 1873, a monthly journal. Subscription, $2 per annum in advance. Published by the editor and proprietor, W. F. Clarke, Chicago, Ill.

Our thanks are due to the Commissioner of Agriculture for the monthly report for January, 1873. Much valuable information and interesting statistics contained.

We are in receipt of the March number of the *Overland*. It contains more than its usual average of excellent and entertaining articles.

ALWAYS keep a supply of lime or finely broken bone within convenient reach of your poultry.

NEW AND RARE PLANTS.

New Lily—*Lilium Leichtlinii*. The origin of this Lily is unknown. Messrs. Veitch & Sons, the well known English nurserymen, found a bulb of it among some *L. auratums*, which they received from Japan a few years since, and J. D. Hooker, Curator of the Kew Gardens, named it after Max Leichtlin, of Carlsruhe, a gentleman who has paid especial attention to the introduction and culture of Lilies. This new Lily resembles, in some respects, the common Tiger Lily in the form of the flower, but differs from it not only in the color but graceful habit of the plant. The flowers are solitary but numerous, four inches in diameter, nodding; bright, light golden or lemon yellow, spotted or blotched with maroon. The bulbs appear to be perfectly hardy, and the plant altogether a vigorous grower and profuse bloomer. This Lily bloomed for the first time in this country last summer, on the grounds of Mr. C. L. Alen, near Brooklyn, N. Y.—*Rural Carolinian.*

Juniperus Chinensis aurea—*Young's New Golden Chinese Juniper.* The *Gardener's Chronicle* says: "Certainly one of the foremost places among golden-leaved Conifers must be accorded to Mr. Maurice Young's *Juniperus Chinensis aureus.* The Chinese Juniper is well known as one of the hardiest and handsomest of coniferous shrubs, and when we state that the novelty just referred to is the exact counterpart of its parent, in all but its color, and that color is equal at least in richness of hue to any golden Conifer hitherto known, but little further mention of it is needed. We may however add, from a recent personal inspection of the stock, that it is thoroughly constant. Not a plant among the entire stock shows the least tendency to run back, but all, whether

infants of six inches or adolescents of three feet high, appear in the same aristocratic 'cloth-of-gold' array. * * * Our notes indicate that the propagated plants take on a close pyramidal habit, and have moreover the two-fold character of foliage which is seen in the parent, and that the color of the more prominent portions of the plants is as bright as the tint of a Golden Holly. Taking these various points into account, and coupling with them the free-growing, hardy character of the plant, there is no exaggeration in pronouncing this novelty to be one of the best and most desirable of ornamental Conifers."

Crocus Scharojani — *Iridacæ*. A pretty, hardy, autumn-flower bulb, related to C. *Suwarowianus*, and producing its blossoms before the leaves appear. The flowers are of a deep saffron color, and are developed in the early autumn months. It is found in the western Caucasus, and has been introduced to the St. Petersburg Botanic Garden.—*Gardener's Monthly.*

New Japan Cockscomb — *Celosia Japonica.* This is a very elegant variety imported from Japan last year. The plant from the root to the smallest leaf-vein, with the exception of the green blade of the leaf, is of brilliant scarlet crimson; the combs are exceedingly rich, bright and elegant. James Vick, of Rochester, N. Y., seems to possess the stock of this desirable plant.

Dicentranthera macrophylla—*Acanthacœ*. An ornamental stove shrub, with very large obovate lanceolate leaves, and terminal erect spikes a foot long, of handsome bilabiate bell-shaped flowers, which are rosy purple externally, and almost pure white within. It comes from tropical Africa, and has been raised and flowered in the Glasnevin Botanic Garden.—*Gardener's Monthly.*

Ampelosis Dissecta—*Vitacœ*. A slender and very elegant free-growing hardy climbing shrub, furnished with long reddish branches, which bear palmisected leaves having pinnatifid segments, so that the leaves closely resemble in form the fronds of *Litobrochia pedata.* It bears small, roundish, bluish, glaucescent fruits. Two or three varieties of the plant have been introduced from China to the Jardin du Museum at Paris.—*Gardener's Monthly.*

New Variegated Cockscomb—*Celosia aristata variegata.* This is an exceedingly beautiful novelty, originating at Erfurt, Prussia. The contrast of rich, deep crimson and golden yellow with lacings and fringings of light crimson is very brilliant and attractive. We are assured that the plant is perfectly constant in character. Briggs & Brother, of Rochester, N. Y., appear to have the exclusive sale of this superb novelty.

Thujopsis Standishii. — Introduced from Japan in 1861, by Mr. Fortune, who discovered it growing near Yeddo. it somewhat resembles the *T. dolabrata* in its general appearance. Its leaves are smaller, of a bright glossy green above, and a dull glaucous color below; its branches are slender and pendulous. It is quite hardy, and, like its congener, of slow growth, at least when young, requiring apparently similar treatment to *T. dolabrata.*—*A. Fowler, Castle Kennedy, in Gardener's Chronicle.*

Primula Japonica—(*Queen of the Primroses*). This hardy new Japan Primrose is one of those genuine acquisitions to our floral wealth that occurs only at rare intervals, and in the hands of hybridizers it will probably become the parent of a series of new varieties that will play an important part in the spring decoration of the flower garden. A Primrose growing to the height of 18

inches, and producing whorl above whorl of flowers of a rich magenta color, each flower measuring from half an inch to an inch in diameter, is likely to reverse all our previous notions of Primroses. The sentiment of humble beauty universally attached to the common Primrose can not be applied to this variety, which may be said to assume magnificent proportions. It is, *par excellence*, a plant for the amateur, for its great beauty, its hardiness, and its free-seeding qualities, while its culture is of the easiest kind. Strong plants should be at once planted in any deep, rich, garden soil; and, although it is believed to be perfectly hardy, it might be well, until a stock is in hand, to plant it where some slight natural protection is afforded. By mid-winter the whole of the large handsome leaves will have decayed, and a few only of the smallest will be left to mark the heart of the plant. This being its habit, no uneasiness need be felt; but when in this state, should the weather be unusually severe, it may be well to invert a pot or pan filled with dry leaves over the crown: immediately the weather moderates, this must be removed. A plant treated in this manner last winter, threw up a very strong flower-stem in the spring, and was altogether the finest we have yet seen.

It produced eight whorls of its lovely flowers in succession, one above the other, and from it was gathered nearly a quarter of an ounce of good seed. Coddling should be strictly avoided, for the only failure of a good bloom we have noted resulted from over carefulness in the matter of protection. The most effective way of propagation is by division of plants after blooming, as it secures strong blooming plants for the next season. In most cases every bloom spike will cause the plant to multiply by two. When these offshoots are of a good size the plant should be taken up and divided, each crown with its own portion of roots. Replant in good soil in a half shady border, from whence, when the plants are well established, they should be removed with large balls to the situation in which it is desired they should bloom.—*Gardener's Monthly.*

Perpetual Flowering Tree Carnation, La Belle.—The forerunner of a new race of varieties. The flowers, of the purest white, are very large and smooth, perfectly double, and delightfully fragrant, and are produced, all the year round, in such profusion, that one or more plants should be grown wherever cut blooms are in request.—*Gardener's Magazine.*

White Calycanthus.—Mr. Berckmans reports in the *Farmer and Gardener* that a white flowered variety of the Calycanthus has been discovered in middle Georgia. It blooms continuously till frost. This sweet shrub will be in great demand by the cut-flower folk, as we should judge it would force easily through winter.

A Purple-leaved Birch has been found by some one connected with the firm of Transon Bros., Orleans, France, and is now under propagation. It is a variety of *Betula alba.*

NEW FRUITS AND VEGETABLES.

New Early Peach.—Among the many new and valuable Peaches originated by that well known fruit-grower, Thomas Rivers, of Sawbridgeworth, England, is one known as the *Early Beatrice.* It has been fruited by S. G. Bilgen, of North Carolina, who says it does not rot, is of good size and color, and of superior quality—ripening two weeks earlier than Hale's Early. It can be

obtained from Ellwanger & Barry in the coming autumn.—*Ohio Farmer.*

The "Pond Pear."—This is the name given to a new Pear by Dr. S. A. Shurtleff, of Brookline, Mass. The Doctor has been introducing new Pears for many years, some of which are valuable acquisitions to the list of American varieties. The "Pond" is of medium size, has a rich, sugary flavor, and would be highly esteemed by persons who prefer sweet Pears to those of a sub-acid, or vinous flavor.—*New England Farmer.*

Gardeners should not forget that some of their choicest flowers are borne by plants that are virulently poisonous, and that all necessary operations connected with these should be carried out with much care and caution. There is a warning illustration, from the *Kentish Gazette* of February 4th. Mr. Stephen Maple, under-gardener to F. Phillips, Esq., Lee Priory, Wingham, has met his death under singular circumstances. He was training a creeping plant of a poisonous nature (probably a Euphorbia), when he was pricked in the hand by one of the thorns. Mortification set in, and he died in great agony four days afterward. He was 77 years of age.—*Gardener's Chronicle.*

Zanthoxylon fræineum for Hedges. We see the Prickly Ash named as a hedge plant. It is thorny enough, but surely it can not everywhere be as troublesome in the way of suckers as it is wherever we have known it, or no one would be found to say a word in its favor.—*Gardeners' Monthly.*

There have been 27,000 distinct species of insects catalogued in Europe that pray upon wheat.

CULTURE OF VERBENAS.

To grow Verbenas well it requires a good bed in the right place. But it should be where there is plenty of sunshine, as they will not succeed in the shade. Any good, sufficiently deep, rich and friable soil will grow them. A lawn, too, is a fine place for them. Cut out a round bed, or any other shape desirable, on a lawn or grass-plat; invert the sods and place them in the bottom of the bed; put six or eight inches of good soil on the surface; set a good plant of double Zinnia, or a Geranium, in the centre. Buy or beg a dozen or more of good, strong growing plants, not high-spindling affairs (particularly if you have to buy them); set them two feet apart in the bed. If they are not pot plants, set them so that the bottom of the Verbena will be six inches deep. If the plant is branching as it should be, bend off the branches in a slanting position, and fill in the centre with soil nearly to the surface; water freely to settle the soil around the roots, and then fill up the space with dry soil to prevent baking. Peg down the plants as they spread, and keep the soil well cultivated, and, of course, free from weeds. You will then have a fine bed of Verbenas. If you should want to grow good seedlings, get good plants to begin with. The best Verbenas produce the best seed, especially the scented and red colors, just as the best Peaches do, but you can not entirely rely on either. The probability is you will be satisfied with the finest that have been already raised, without troubling yourself about your own seedlings. This is more the province of the professional florist. When you are tired of your Verbenas, or they should perish, or grow too rusty and black, you can spade them in, and this process will enrich

the soil sufficiently, especially if done yearly. The plants that have blue, purple, and white colors have the most seed, and the flowers of most of them are sweet-scented. A few years past a fragrant Verbena was a novelty. We have now quite a variety of them. Gather your seeds early in the morning when the dew is on, or after a shower. Do not use heating manure, as it will make the plants rusty-black. The bright and showy flowers of the Verbena, make it the most popular bedding plant in cultivation. We here give the names of a few of the best: Verbena Hybrida, Auricular Flowered, New Striped Italian, Pure Blue, Pure Scarlet, Montana, Blue Bonnet, Gail Hamilton, President, Queen of Stripes, King of Scarlets, Grand Victor, King of Purples, Snow Flake, Scarlet Circle; with endless others, old and new.—*Pacific Rural Press.*

WORK FOR THE MONTH.

BY F. A. MILLER.

Spring time is upon us, and the rainy season will soon draw to a close. Much work remains to be done yet, before the dry season commences.

The present season has been one of the most favorable for the planting of trees and shrubs, and for outdoor improvements. Farmers have had ample time to get in their seeds, and from all accounts, the fields and the gardens never looked better. This condition is most encouraging for every one who has a direct or indirect interest in the welfare of California, and would warrant some attention to the improving and adorning of country homes. I am sorry to say that the planting of trees, and shrubs, and flowers for ornament, has not been carried on upon so extensive a scale, as was anticipated; our people seem to move slowly in all enterprises not calculated for immediate returns.

There is yet time to plant a few trees. They can be obtained cheaply, and our nurserymen have plenty of them. Those who desire to plant during March and April, should take the precaution of mulching, unless water can be had for irrigation during summer.

I call attention again to the various trees mentioned in my communication of last month, all of which are well adapted to our climate. Under all circumstances, I would insist upon planting young trees instead of old ones; in three years from now, the difference in size between these young and older trees will hardly be noticed.

In transplanting trees, I would call attention to the condition in which the roots of trees should be to insure their growing. Nurserymen understand all this, but many of our farmers and amateur gardeners do not. The general rule is, that evergreen trees and shrubs should be transplanted with the ball of earth in which they have grown, while a deciduous tree or shrub (*i. e.* trees and shrubs which shed their leaves in autumn; as the Apple, the Elm, the Maple, etc.), can be safely transplanted without having any earth attached to the roots. An evergreen tree, therefore, may be transplanted at any time, provided that all the earth penetrated by its roots is moved with it. But inasmuch as this is not easily accomplished, as it would require too much arduous labor to do it, and as some soil will not adhere well to the roots, particularly in summer time, the most favorable time for transplanting is during the early winter season, when most of the evergreen trees are at rest, and new fibres may be formed during the latter part of our rainy season. If

evergreens, therefore, are transplanted early in the rainy season, a comparatively small amount of soil attached to their roots will make the removal safe. However, there are some evergreens, such as Eucalyptus (Gum tree), and the Acacia, which are not apt to grow and do well, if any of their roots are disturbed by the removal; and our nurserymen, therefore, are in the habit of cultivating them in pots or boxes, which is really the only safe, and certainly the best method. I was not a little surprised that the *Pacific Rural Press*, some time since, published an article in favor of raising Eucalyptus in the open ground, and denouncing the practice of raising them in pots or boxes, their theory being illustrated by one representation showing the action of the roots if grown in pots; and another representing the roots of a tree grown in the open ground. The fact is, that the representation of the spiral root shows that that particular tree had been retained in entirely *too small* a pot for its size. Any plant or tree which is for too long a time confined in a very small-sized pot, is unfit for transplanting. The practice of raising Eucalyptus and Acacias in pots or boxes is the only correct one, provided they are shifted into larger pots or boxes when the size of the tree and the condition of the roots require it. The Cypress, the Pine, the Juniper, and other coniferous trees, can suffer the loss of some small roots in transplanting, and, if very young, they may be transplanted with safety into the open ground without any earth around their roots; but the Eucalyptus or Acacias will perish unless they are protected from the sun for some days.

This is the proper time for sowing seeds of all kinds of trees and shrubs. They should be sown in pots or boxes, covered with glass, and placed in a warm situation. Hardly any evergreen tree or shrub seed will germinate in the open air in this climate.

In the vegetable garden, no time should be lost to sow all kinds of vegetable seeds which are desirable. The present time is also favorable to the planting of Asparagus roots, Rhubarb, Horseradish, etc. If a few plants of early Cabbage can be obtainable, they should be planted in freshly prepared soil. Asparagus and Rhubarb beds require a careful overhauling. They are about to make their appearance.

Planting of spring bulbs is still in order; I have also planted some Gladiolus for early flowering. Look after the Pæonies and Lilies, which are now beginning to show their foliage; their young and tender shoots are apt to be broken off by inexperienced or careless hands. The place where they are planted should always be marked by a proper stake or label.

Many plants of the greenhouse will soon show rapid growth and development; examine them, and if the roots are spreading around the outside of the ball of earth in which they grow, it is a strong indication of the necessity for shifting them into larger pots.

If the weather be warm and pleasant, all plants will require more water than they have had during winter time, and frequent airing.

Cork Oak.—A correspondent, dating at Alhambra, California, reports that the acorns of the Cork Oak, distributed by this Department a few years since, have done well, and expresses the opinion that a new supply would be carefully improved, in view of prospective profitable results.—*Monthly Report of Department of Agriculture.*

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

The value of good fruit, as an article of food, can not be overrated. It is now beginning to be justly appreciated, and is not considered, as it once was, an almost superfluous luxury, and only eaten very sparingly between meals, or after a hearty meal of meat, vegetables, and pastry; and then, only, because there was room for a little more. It is now pretty well understood, that fruit is best eaten freely between meals; either before, or an hour or two after breakfast, and even frequently at other times, provided it is not just before going to bed, as it does not then agree with many persons. Formerly, also, it was too frequently supposed that fruit should be chiefly stewed, and a quantity of sugar and spices added, instead of being, as now, mostly consumed in its natural state.

The sun is really the best cook for most, if not for all kinds of fruit. Nature understands her business, and the appetites and instincts of children are almost universally pure, and they always choose uncooked fruits, as do those nations whom we—in our self-assumed superiority and pride, perhaps, call uncivilized. The inhabitants of the tropic isles subsist almost entirely upon fruits, eating them just as they are plucked from the trees or vines. And where beneath the sun (if they do not get hold of alcoholic drinks from us), do we find such healthy persons as they?

During our civil war, when our soldiers ate all the peaches, apples, pears, grapes, berries, and melons they could lay their eager hands upon, they were speedily cured of fevers, dysenteries, and even chronic diarrhœa, the surgeons to the contrary notwithstanding.

There is still a considerable prejudice in the minds of many persons against the free use of fruit, supposing it to be a fruitful source of worms and summer complaints in children. To be convinced of their unfortunate error, they have only to see children in the country, where they have generally an abundance of fruit. They eat it before breakfast and after breakfast, before dinner and after dinner, at all hours of the day, and not unfrequently munch Apples or Pears after they are in bed. City children often suffer from eating unripe fruit (and there is too often, unfortunately, too much of that in the market, and it is too frequently not fresh enough), in large quantities, or from eating an excess at one time one day, and having none for many days at other times.

What a blessing it is that all our markets in California possess such a profuse plenty and great variety of fruits and vegetables; but, like all things free to our possession, our plenty is hardly appreciated or improved. Those of our readers who can not go to the country to reside, can welcome the country to their larders and their kitchens. Good housekeepers, of whatever length or weight their purses may be, can find in the early morning markets, indeed, at almost at any time, the equivalent of a country excursion, adapted precisely to their means, be they greater or less. Fresh, nice fruits and vegetables, carefully selected, properly prepared, and judiciously served, are better than medical remedies for disease, inasmuch as they are preventives, when used in moderation. By a proper and systematic mode of living, good housekeepers can and do improve the best advantages of the country, without the toil of moving, or the expense of traveling. Of course, for

those whom leisure and other circumstances permit, a country residence in the spring or summer months is a great privilege. Those who can not enjoy the green fields or the sea-beach, may adopt the philosophy of Charles Lamb and "Tim Linkinwater," and maintain the superiority of a city residence against all opponents; and this they can do by a rational use of the bounties of Nature, which our country friends are quite ready to exchange for the bounties of the specie currency. Every grade of income in California should be able to command its proportion of the delicacies of each season. Ranking with cleanliness and temperance, a proper regard to Nature's bill of fare is a good preservative of health, and a great promoter of bodily comfort.

But having pretty nearly exhausted our favorite subject of good fruits and vegetables for the promotion of health, and made it, we think, pretty clear, we will now discuss the more practical merits of those articles in our markets, for the present month.

This is naturally the dullest and least interesting season of the year with respect to fruits. As to vegetables, the incoming new sorts have a greater tendency to excite the palates of our citizens; but with regard to them, the recent (for California) hard frosts and very cool weather have operated to diminish much the supply of Asparagus, Green Peas, and Rhubarb, and caused an advance in price.

Fresh supplies of Los Angeles Oranges and Lemons have lately arrived, and are still of rather unusually good quality this year, and lower in price. Limes are quite scarce; but, no doubt, fresh and plentiful supplies will soon reach us. Oregon Apples meet with ready purchasers, and this fruit, generally, is in active request; also some of the best winter Pears, but at rather high prices, although the latter are much less tempting in appearance than the Apples; most of them being blotched and rusty-looking. The prices remain much the same as last month, with an upward tendency. Those fine and large varieties of the best dried pitted Plums form a very delicious-looking picture in Clay Street Market, and their price is moderate, considering their very luscious qualities. These fruits are in fair demand.

One among the numerous advantages which our superior climate affords us is, that we can preserve our Pumpkins and sweet Potatoes without the extra great trouble they have to use in the East for their preservation in winter; and so with all our other vegetables as well as fruits. Mushrooms, also, that peculiar flavored, and generally admired of the fungi tribe, can be enjoyed here for a long time. Potatoes continue in excessive supply, and new ones are appearing.

Pineapples and Bananas are yet rather scarce, the former somewhat poor specimens. The finest exhibit we observed, was one, at present, the property of Mr. S. M. Brooks—the artist—in a picture; and this is cruelly tempting to the eye and appetite, so natural-looking is it. Cocoanuts are in plenty. Nuts in variety are in good supply and at reasonable rates.

Green Cucumbers, the first of the season, have made their appearance from Laguna Valley, near Vacaville, Solano County, and sold at $4 per dozen. They were raised in a hothouse, and are a month earlier in market than they were last year. They are small, but deliciously flavored.

Rhubarb, or Pie Plant, is now, also, in the markets, of good size and fine quality.

Correspondence.

To the Editor of the California Horticulturist:

Dear Sir:—Permit me to call your attention to what appears to me to be a serious defect in horticultural literature—the absence of any *rudimentary* instruction book, which will enable the inexperienced cultivator to make a correct start in his gardening operations. For example, the usual formula, "Let the soil be properly prepared," is the very stumbling-block of the beginner, who needs to know just what that means.

Amateur.

To the Editor of the California Horticulturist.

Dear Sir:—In the *Pacific Rural Press* for the 15th of February, I notice a few appropriate remarks, addressed to the Horticultural Societies of this State, in general, and to the Bay District Horticultural Society in particular, respecting their self-imposed duties, and the manner in which they perform them. The writer's suggestions are very good and friendly, and they are also critical. I hope they will have the effect of arousing the slumberers, and stimulating the Secretaries to report something more of their transactions than that they meet, read the minutes, and adjourn, which is about all we hear of them through your Magazine, which appears to be their medium of intercourse with the outer world. The practical experience of such a body of men ought to be of great value to the floricultural community of California, if they are public-spirited enough to give it; if not, of what use are they?

In the same number of the *Rural Press* is an article on flowers, very good in its way; but what vile spelling, and how absurd to assume the position of a floricultural serial without a botanical dictionary in stock.

I wish you would be a little more explicit in your information respecting the management of the smaller bedding plants. The Verbena, for instance; should it be pegged down to the soil? How and when should it be pruned, or should it be cut at all? Is it necessary to renew the plants every season?

Your early reply will greatly oblige

Philoflora.

San Francisco, February, 1873.

Editorial Gleanings.

Rough Cork for Rustic Work.—Some few years since, a company, owning large Cork forests in Portugal, introduced for rustic work, and other horticultural purposes, a quantity of Virgin Cork. This first crop of the bark of the Cork Oak (*Quercus suber*) is very rugged and uneven upon its outer surface; it is, moreover, of a dusky grey color, is frequently covered with Lichens, and has altogether a weather-worn aspect—all which appearances recommend it for the purposes for which it was introduced. Besides its uses, however for growing Ferns and Orchids upon, it is much used for imitation rock-work in aquariums, and its latest application was for a similar purpose, but on a much more gigantic scale, for in the pantomime which has been played at the Crystal Palace, we understand the rock-work was formed of this Virgin Cork. The more general utilization of this Cork in Europe must be a great advantage to the owners of the Spanish and Portuguese cork forests, as, from the fact of the cork being uneven, comparatively hard, and full of holes, it is useless for bottle corks. This virgin or original bark is usually taken from the tree when it is about twenty-five or thirty years old, and it is removed with much care, so as not to injure the

inner bark, which, of course, would interfere with the formation of the second crop, besides injuring the tree itself. After the removal of the first crop, the following crops are taken off about every eight or ten years, but the third and succeeding crops are of the best quality, and consequently the most valuable. A remarkably fine specimen of cork, stripped in one piece from a tree which grew in the Sierra Morena, Estremadura, has lately been presented to the Kew Museum. When we state that it is five feet nine inches high, and eight feet eight inches in circumference, it will be seen that the tree from which it has been taken was of no mean size. —*Gardener's Chronicle.*

Preserving Action of Boracic Acid.—It has been found that boracic acid has a preservative action upon milk and beer, and it is stated that one gramme added to a quart of milk keeps it sweet and fresh in hot summer weather for one hundred and twenty hours, while milk not treated in this way will become sour in thirty-six hours. The addition of boracic acid to milk does not injure it for use, but the cream is separated far more slowly.

The Apple Worm in California.—A few specimens of the *Corpacopsa pomana* have at length been captured in California. It is believed that the present comparative immunity from eastern insects will not last long in the Golden State.—*Gardeners' Monthly.*

Wisteria versus Flies.—A New York housekeeper has discovered that the Wisteria creeping plant will keep out house-flies. The pestiferous insect will not enter a window where one of these creepers is growing.

Camellia Culture—use of Lime Water.—Mrs. G. W. Carpenter, in the *Gardener's Monthly*, says: "In regard to the watering of Camellias with lime water, the facts are as follows: The plants are grown in large pots, and have been in them undisturbed for several years. A large reservoir on the place, containing 500 gallons of water, receives annually about three bushels of lime; before watering the plants, the lime is usually well stirred up with the water, allowing it to settle before use. Lime water was first used to kill worms in the soil, which it effectually did. It has since been continued regularly; the thriving, healthy appearance of both roots and branches seeming to warrant its use."

Germination of Primula Japonica.—The following is the result from my experience in sowing seed of this noble flower: Of seed harvested here, from two plants in pots, completely ripe on July 15th, I sowed half on July 19th, the young plants appearing on August 30th. The rest of the seed was sown on September 25th, but no plants are as yet visible. The pans were placed in a cold frame, and the soil kept moderately moist. Of the first sowing, I have now a pan with twenty-five or thirty nice little plants, pricked out a month ago. F. Gloede Eppendorf, *Hamburg.*

Bulb Culture in Holland.—Although one-fifth of the entire land in the Netherlands is worthless for cultivation, and another fifth is meadow-land, yet 47,500 acres of the remainder are devoted to tobacco, 35,000 to hemp, and 500 acres to raising Tulips, Hyacinths, and other flowering bulbs. Holland has ever excelled in this sort of horticulture.—*Popular Science Monthly.*

NAPA SODA SPRINGS, NAPA COUNTY, CAL.

Watkins, Photo. Country Residence of Colonel J. P. JACKSON, of San Francisco. *For Cal. Horticulturist.*

THE

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AND FLORAL MAGAZINE.

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THE RURAL HOMES OF CALIFORNIA.

BY THE EDITOR.

NAPA SODA SPRINGS, *the Country Residence of Col. J. P. Jackson.*

In previous numbers of the Magazine examples have been given of our more southern homes, located upon the level lands. We propose in the present number to present the conspicuous contrast of a residence on the mountain side in a northerly county, and in that favored valley, which, by the brush of the painter and the pen of the tourist, has been rendered almost classic.

Our frontispiece represents a view at the head of a cañon in the mountains which form the eastern boundary of the Napa Valley, six miles northward from Napa City. From this point, and about six hundred feet above the level of the valley beneath, the artists Keith and Virgil Williams transferred to their canvas the natural beauties of a landscape so rich in towering peak and green-enameled vale, sinuous creek and open bay, russet-brown hill-side and grain-veneered field, that their pictures form the most pleasing gems in some of our best art collections. The valley below, for twenty-five miles, with its rectangular fields of varicolored crops, looking like an elongated chess-board; the bay, reflecting from its sunlit waters the white-winged sails of the world's commerce; and the mountains in Contra Costa County, with Tamalpais, king of the Coast Range, presenting in contrast his graceful outline to Diablo's heavier front, form together a series of contrasting beauties which may well claim to be unmatched for sublimity. And, as if to leave no doubt upon this point, there arises over and beyond all these the great sea view, which gives the final and a kingly grace to this country-seat, thus ocean bound. Such daily sights as these made Alexander Smith a poet, and tend to dispel all narrowness from the soul of the spectator. This illimitable stretch of vision, which allows no earthly object to stay it, but at the horizon blends with the spacious heavens, where the setting sun seems to bathe himself in the deep ere he rainbows the orient with his pathway of fire, truly "lends enchantment to the view," and gives additional zest to rural enjoyment and the life Arcadian.

Looking to the local pictures which make the place attractive, we find groves of patriarchal trees — the Live Oak (*Quercus agrifolia*) and the Black Oak (*Quercus Sonomensis*), with boughs

gracefully festooned with the gray Spanish Moss or the "dark, druidical Mistletoe," and which command respect for their stately pre-eminence, dignity of strength, and inviting fullness of shade, constituting them elders amid the modern growths—a barrier to the tempest, and a solace from the sunburst.

"Not a prince
In all that proud old world beyond the deep
E'er wore his crown as loftily as these
Wear the green coronal of leaves with which
His grace has crowned them."

Other trees of lesser growth, with tops as wide-spread as those that grace the English lawns—some having arms gnarled and shaggy, and others with boughs that droop as gracefully as Willows, or the Eastern Elm—adorn the open grounds.

The *Eucalyptus* (Australian Gum) towers high above its neighbor, the Mountain Pine, in its graceful aspiring. The Italian Cypress adds an exotic charm to the natural scenery, and the Palm-tree, the Almond, the Olive, and the Orange (growing from seeds here sown), give variety to the view, and testify at once to the semi-tropical mildness of the climate and the generous fertility of the soil.

Along the ravines and gulches, and overshadowing the walks, are the Buckeye (*Æsculus Californica*), redolent of perfume; the brilliant Laurel (*Areodaphne Californica*), a fine evergreen with fragrant leaves; the Ash (*Fraxinus Oregana*); the large-leaved Maple (*Acer macrophylla*); and, most magnificent of all, the Madroña (*Arbutus Menziesii*), with bright green waxen leaves; these, with the flesh-tinted Manzanita, constitute the forest scenery of these mountain sides.

Of the beautiful flowering shrubs, are: the *Ceanothus* (California Lilac); the *Spiræa*; the sweet-scented and favorite *Calycanthus*, with color of a deep claret; the Dog-wood (*Cornus*), conspicuous for its snowy-white flowers; the Snowberry (*Symphoricarpus*); the *Azalea occidentalis*, having deliciously sweet-scented white and yellow flowers in profuse abundance; the Chestnut (*Castanea chrysophylla*) and the wild Rose.

Of Climbers, among many others, we only name the wild California Grape (*Vitis Californica*) forming natural and most graceful bowers, as continuous and shady as those of the far-famed Banyan-tree; the Virgin's Bower (*Clematis*), and the Honeysuckle.

California Bulbs grow here in great abundance and rich variety. Of the finest, are the *Cyclobothra*, the *Calochortus*, the Lily, the *Brodidas*, the Iris, and others of truly charming colors.

Most attractive of all the flowering plants are the Columbine (*Aquilegia*); the ever-pleasing red Larkspur (*Delphinium nudicaule*); the California Poppy (*Eschscholtzia*); the Lupin, the Evening Primrose (*Œnothera*), and the Monkey Flower (*Mimulus glutinosus*.

Along the shady hill-sides the ground is literally covered with our fine California ferns, such as the *Polypodium*, the *Adiantum*, the *Pellœa*, the *Gymnogramme*, the graceful *Woodwardia*, and the *Aspidium*. Over a wide extent of wall, on fences and house-sides, the slow-growing Ivy and climbing Roses extend themselves. The Lemon Verbena, not a flower-pot plant as in the East, but here a bush six feet high, emits the fullness of its grateful fragrance; the Loquat invites by the immaculate purity of its white blossoms; and the scarlet berries of the Madroña, dotting hill and roadside, engage the sight by the conspicuous brilliancy of their coloring.

Numerous living springs of fresh water burst from the mountain sides at

such an elevation as to send the natural flow over the entire 640 acres which constitute the Springs property; and throughout the year this water is as cold as though it flowed over subterranean beds of ice. Indian relics found here in abundance indicate that these were chosen spots by the aborigines; and, doubtless, countless times the western Leather Stocking has here brushed aside the leaves, and quaffed the sparkling current at its fountain.

Along one side of the property a mountain brook gathers the hill-side offerings of congenial springs, as it curvets and frets itself through cañon passes — now loitering to gather fresh strength against a temporary embargo, and then dashing away in a white gush of water-fall — now with swift current dancing about the bends and eddies of sycamore-guarded banks, and again filling the deep rock-encircled pool (where the speckled trout coyly display their beauties, and anon hide themselves away), whose crystal waters temptingly invite to a grateful bath. On the other boundary a rocky gorge resounds with the ripple of numerous streamlets, until the swelling torrent of winter's rain sends the combined waters raging over a perpendicular fall ninety feet in height —a miniature Niagara.

Inviting paths—miles in extent—laid out under the personal supervision of F. A. Miller, Esq., landscape gardener, lead, with gentle grade, to the various points of interest—now to a grottoed cave, and anon to a mountain grove—here to a vine-covered bower, and there across a rustic bridge, beneath which living waters leap and sparkle—and terminate at last at the summit of Castle Peak, beneath whose outlook rolls the whole broad panorama of Napa Valley. Reservoirs, dug from their rocky beds, holding each 200,000 gallons, gather the waters for domestic use; and the stone quarried from the spot supplied the material for the buildings that adorn the premises. An orchard in full bearing furnishes varied and abundant fruit; and the vineyard, of choicest selection, has proved its merit by the numerous premiums from our State fairs that already indorse its wine.

But the feature which most peculiarly distinguishes this favored spot, and makes it, therefore, specially attractive, is its Mineral Springs, which have been famous for their curative powers. From the hidden treasury of Nature's chemistry, in her subterranean laboratories, a perennial flow of about four thousand gallons daily is developed—mingling iron, soda, magnesia, lime, and muriate of soda with free carbonic acid gas, in such happy combination as to impart pleasure, health, and physical improvement as the result of their use. From one of these springs is poured forth the article well known in the commercial world as "Napa Soda. The water is bottled and sold just as it flows, pure from Nature's laboratory, with all her sparkling freshness still upon it. No adulteration mars its native health-giving and tonic properties, and its long and continuous use in the market attests its merit. The same elements are held in solution which give to the Carlsbad Springs in Bohemia their rank as the first in the world.

A hotel is now projected for these springs, in place of one destroyed some years since by fire; and in addition to the natural beauty of the situation, the genial, even mildness of the climate, and the attractions of artful ornamentation, one of the greatest, if, indeed, not the first consideration in the minds of visitors, will be the medicinal qualities of these waters, that strengthen for active life the hand, the heart, and the mind.

We can not better close this article, although still too short, to more than note generally the features of this lovely place, than by a quotation from the golden letters engraved by Imperial decree above the Springs at Carlsbad:

"To suffering man from nature's genial breast
A boon transcendent ever mayst thou flow.
Blest holy fount, still bid old age to know
Reviving vigor; and if health repressed
Fade in the virgin's cheek, renew its glow
For love and joy; and they that in thy wave
Confiding trust and thankful lave,
Propitious aid, and speed the stranger band,
With health and life renewed, unto their native land."

VASES AND VASE PLANTS.

Vases are generally of worked iron or stone, or various imitations of them, and are especially appropriate for gardens laid out in the geometric style; but they have a good effect in many other modes of laying out gardens. In all cases they should be large enough to hold sufficient soil to keep the plant in health. We prefer vases rather large than the reverse; for we must enter our protest against the miserable, dished-up plants which are often seen struggling for existence for want of water and earth to grow in. These are all the more necessary in our long dry summers. In natural scenery, either real or imitated, vases should be placed in immediate connection with gravel or other walks, or roads, which will form a kind of base for them, or at no great distance therefrom; or they may be placed on pedestals on low walls, or stone terraces. It does not require expensive plants to create a beautiful combination of form or color, and make them harmonize with the situation they are to fill. A vase filled with common California Ferns produces a most charming effect; and those who grow exotic Ferns will readily perceive what elegant groups they would make, if transferred to a vase. But these Fern vases should be kept mostly in the shade. Some African or Japanese Lilies, supplied well with water, form fine objects. Their sword-like leaves bend gracefully over the rim of the vase, and crowned with their variously-colored bright flowers, render them as conspicuous as they are graceful. Phormium tenax, New Zealand Flax, is another suitable plant for its foliage, as are some of the Yuccas, but these latter must be showing bloom, before they are transferred, when they are really fine objects. There are many other sword-leaved plants, including Gladioluses and Irises, well adapted for the purpose. Nor should we forget the Acanthus.

We will conclude by naming a few creeping plants adapted for planting round the principal: these will creep over the rim, and may then be left eitheir to grow in their own way, or be trained so as to form festoons round the base. Lophospermums, two or three kinds; Maurandyas, blue, red and white; Tropœolum pentaphyllum and speciosum; Calystegia pubescens; Lysimachia nummularia (White Loosestrife); Campanula fragilis; Lobelias erinus and unidenta, and some others, although they do not grow so tall as the former, are useful for the smaller vases. But all the above effects can not be accomplished well, without water being convenient to supply them copiously daily, with it, in dry weather.

THE ODORS OF PLANTS.—It may be laid down as a general principle that a larger proportion of white flowers are fragrant than those of any other color; yellow comes next, then red, and lastly blue; after which, and in the same order, may be reckoned violet, green, orange, brown and black.

FLOWER-TALK.—THE POND LILY.

BY NORA BECK.

I float on the breast of a dreamy lake,
Rocked by the ripples, but always awake.
I can not greet the earth-flowers bright,
That I know are yonder, out of sight,
But I lie content, on the glassy brim,
While my sister lilies nod and swim;
And so I will float, till I fade and die,
Under the blue midsummer sky.

I can not greet the flowers of earth,
But I know the secret of their birth.
Bird-song, and night-wind, and wandering bee,
Bring all the news of the woods to me,
And the red deer stoops his thirst to slake,
By the pebbly marge of this quiet lake.
My lover, the sun, in his daily race,
Drops kisses of light on my pallid face;
While *I* fling my perfumed incense high,
Live and love, then droop and die,
Under the blue midsummer sky.

GERANIUMS.

BY F. A. MILLER.

There is no other class of plants which recommends itself so strongly to the lover of flowers, as that which comprises the various kinds of Geraniums (as they are popularly named), and it seems, indeed, strange that there should exist a strong prejudice at the present time, in California, against their cultivation. I am often told, "They are too common;" "they grow in every yard," etc. I believe, there is some little misunderstanding about these Geraniums, or they would certainly figure as the most desirable plants for very many purposes.

In Europe and in the East, Geraniums are becoming the universal favorities, and they should be still more in favor with us, when we take into consideration that in all mild districts they will continue in flower through summer and winter. The different classes of Geraniums have been so wonderfully improved by art and science, that the old nickname, "Fish Geranium," is entirely out of place now.

Geraniums, now-a-days, are divided into a number of classes, well defined by very distinct peculiarities. It will not do for me to go too deeply into this classification, but I will mention:

1st. *Zonale Geraniums*, sometimes called Scarlet Geraniums. These are well adapted to our California climate, particularly on dry soils. Their flowers are of brilliant colors, and continue in bloom throughout the year. For grouping and in masses they are most effective flowering plants, and should be used for that purpose extensively. Of late years really magnificent flowers have been produced. Some of the very best varieties are Black Prince, Charmer, Cufford Rose, Waltham Seedling, Dr. Lindley, Warrior, Ruby, Transparent, White Perfection, Conqueror, Maid of Kent, La Dame Blanche, Rose Queen, etc. All of these varieties I have now under cultivation, and they have proved their excellent qualities in this climate.

2nd. *Double Zonale Geraniums.* When about three years ago the first specimens of these really exquisite flowering plants made their appearance here, they were admired by every one, and high prices were obtained for them. They are a great improvement on the single varieties in many respects. The flowers of the double Geraniums keep well in bouquets, and are valuable as cut-flowers; they are produced in large trusses, which continue in bloom for many days. Our florists propagated them extensively, and are now prepared to sell them at very low prices. It is annoying that their efforts do not meet with more encouragement from our lovers of flowers, the sale of them being very limited, indeed. They flower well in the open air; are well adapted for the green-

house and conservatory, and are very useful for cut-flowers; they are easily cultivated, and are strong growers. Why they are not introduced into every garden, is a mystery to me. I am satisfied, however, that they will grow more in favor every year. Any of the following varieties are very desirable: Andrew Henderson, dark crimson flowers, one of the best; Emile Lemoin, scarlet; Gloire de Nancy, carmine; Rose Charmaux, scarlet; Triomphe de Lorraine, cherry and carmine, a beautiful variety; William Pfitzer, bright scarlet, very effective. All of these may be obtained of our florists, and I have found them doing well everywhere; like all Geraniums, they thrive best in a sunny exposure with a moderate amount of moisture.

3d. *Show Geraniums* (Pelargoniums), popularly known as Lady Washington Geraniums. These produce large flowers, the upper petals of which are marked with dark blotches. They produce an abundance of very showy flowers throughout the year, except where heavy frosts occur; but even there the roots will not suffer, and will throw up stems again. Although the climate of California varies considerably in different localities, Geraniums will not entirely die out, even in the most northern and the coldest districts, if a very simple protection is given by throwing a few shovelfuls of fresh manure or straw around the plants during winter. The number of very excellent varieties is considerable. I will mention a few of the best: Madame Rezant, white and lilac; Reine Hortense, white and crimson; Snowflake, pure white and maroon; Eugene Cavaignac, carmine; Splendor, dark crimson, margined white; Spotted Gem, rosy lilac, dark-spotted; James Odier, carmine and rose; King of Scarlets, bright scarlet; Medaille d'Or, amaranth and white; Wilmer's Surprise, rosy purple, etc., etc.

4th. *Variegated-leaf Geraniums.* There are few plants which are better adapted to the climate of California, than these Variegated-leaf Geraniums, provided that they are not exposed too much to the heavy winds, which prevail near San Francisco during summer. But inasmuch as most of our flower-gardens are sheltered in some way, they may be cultivated here as well as anywhere else. So far, they have been treated as greenhouse plants, but it is evident that their colors display to much better advantage, if cultivated in the open air. The California climate is just what they want. I can assure those who take an interest in flowers, that a good collection of these variegated Geraniums is a most pleasing feature of the garden. They require no particular care, no better treatment than the common "Fish Geranium," but they are of much slower growth. They delight in a deep light sandy loam and a sunny exposure, and require very little moisture. On account of their slow growth, there are but a small number of them at our floral establishments. I cultivate the following, and have good success with them: Sophia Cussack, foliage bright-green, with a zone of gold and black; Mrs. Pollack, bright-red zone, belted crimson and golden yellow edge; Golden Beauty, foliage very rich yellowish green; Mountain of Snow, beautifully margined silvery white; Beauty of Caulderdale, rich red zone, on golden-green foliage; Sophia Dumaresque, broad golden margin, very dark zone, shaded scarlet; Sunset, the same as Mrs. Pollack, but brighter; Attraction, bronzed zone, silver edged, very fine; *Italia unita*, carmine zone, margined white, one of the very best.

5th. *Ivy-leaf Geranium*, of a climbing

habit. In this class, also, wonderful improvements have been made within the last few years, in regard to the colors of flowers as well as in the coloring of the foliage. They are fast growers, and abundant bloomers, always producing a cheerful and pleasing effect. Excellent varieties are: Holly Wreath, *Wilsii grandiflora* (producing charming flowers), Bridal Wreath; *Aurea variegata*, and *L' Elegante*.

6th. *Sweet-scented Geraniums*, which are almost exclusively cultivated on account of their fragrant foliage; as such, they are most desirable, and useful for bouquets, etc. The best are: *Asperum* (pennyroyal scented), *Tomentosum* (peppermint scented), *Balsameum* (balm scented), *Capitatum* (rose scented), *Citriodorum* (lemon scented), *Fragrans* (nutmeg scented).

I have said more, perhaps, about the Geraniums than many of the readers of the Horticulturist may think justifiable, but the subject is a most important one, and should be followed up. Our lawns, our parks, and our public squares, should be adorned with extensive groups of the various Geraniums. Nothing will give a more pleasing and brighter effect, and their cultivation is most simple.

Ancient Farms. — The farm of the celebrated Roman Cincinnatus, consisted of only four acres, the other three having been lost by becoming security for a friend. Curius, who was celebrated for his frugality, and who was three times chosen consul, and thrice honored with a triumph on returning from a campaign, refused from the people a grant of fifty acres, declaring that he was a bad citizen who would not be contented with the old allowance of seven.—*Exchange.*

PREPARATION OF FLOWER-BORDERS—TEMPERATURE.

BY E. J. HOOPER.

It is a far too prevalent, and, at the same time, quite an erroneous idea, that the soil in which flowers are intended to be grown need not be very rich. This is, indeed, a grave error. It is necessary to have healthy leaves as accessories to the production of fine flowers. These can not be had, unless the soil is made deep and very fertile, with fine decomposed manures. Plants in a flower garden should be each one perfect, individually, whether presenting itself by contrast separately, or when grouped with others in masses. But plants in an incomplete and unhealthy condition are far too prevalent in most gardens. No real beauty can exist where a deficiency of vigor is apparent in any part, nor can fine flowers be produced by insufficiently nourished plants. In fact, the very principles of a gardener's art should teach him the necessity of storing sufficient strength in the primary portion of the cultivated plant, its leaves, ere it will be reasonable to expect that blossoms in their greatest beauty can be produced. We may, it is true, also err in the opposite direction, and induce an over-luxuriance or plethora, equally antagonistic to the production of flowers; but, as in all probability ninety-nine cases under the starving system occur to one of its opposite, we may regard the latter as not requiring special notice; and, besides, the too richly made soil will very speedily find its level.

But that flower-borders require at least an annual renewal of composts of some kind, we think, no one will dispute — particularly if these beds or borders, as is frequently the case, are filled through the summer pretty thick-

ly with plants, and not uncommonly by a succession of these floral crops. Can a continued reproduction be reasonably expected under such an exhausting system, unless assisted with manure in a liberal manner?

Asters, Larkspurs, Stocks, Zinnias, and many other similar plants, all give a decided preference to rich soil; growing in it much larger, producing more flowers, and these of infinitely superior character.

Let us advise all who love their gardens, and desire to see the occupants in the best possible condition, to thoroughly manure at the present time. Every vacant piece should have a heavy coat turned in at once; and, also, in the summer, let an application of wood-ash, or vegetable soil, be made at every opportunity; and, if these are not procurable, the same kind of manure as used in the spring may be applied. The result will fully repay the little extra trouble.

The extremes of temperature, between which cultivated plants will flourish, is stated, by experiments, as 32° and 90°; below the former, no vegetation, except of Alpine regions, can grow. The highest point at which terrestrial plants have been found in a state of nature is 140°, but, of course, with such cases we have nothing to do, those immediately inviting our attention being within the more limited range first mentioned. We, in California, are particularly favored in respect to temperature, having a sufficiently numerous class of plants which flourish luxuriantly, both for utility and ornament, to satisfy any reasonable wishes. In San Francisco, we hardly ever have enough frost to do much more than nip severely some of our tender flowers, and the temperature is never so excessively high as to create a debility similar to that induced by intemperate living on the animal frame, and to cause an extension of the tissue, beyond the vital energies of the plant to solidify; or the ducts to be so gorged with crude sap, as to remain unassimilated, and the powers of action deranged, enfeebled, and finally stopped; debility, disease and death ensuing, as a finish and natural end to the immoderate supply of what, whether of heat or moisture, under proper regulations, would have been the source of life, health, and fruitfulness. It seems to be a singular fact, that the effects of excessive cold resemble those already described as resulting from heat, and with the exception that the tissue is not elongated in an unnaturally low temperature, the analogy holds good through each gradation. The action of very cold winds is equally enervating with that of a hot sun; the juices of the plant are extracted in either case by evaporation, and, if continued for any length of time, must prove alike the cause of death.

When the temperature of the day is excessive, the evaporation goes on so rapidly as to cause a vacuum in the vessels, and the plant droops or "flags," as it is called; a condition which, if not corrected, either by reducing the light, or by an extra supply of water, is very injurious, and debilitating in its effects. How fortunate for the recovery of plants from this exhaustion is that natural period for their resuscitation — night—the reviving action going on uninterruptedly, so that the excitability of the plant remains undisturbed; a rule of the most vital consequence, as we may be assured from its occurrence in every region of the universe, and yet more frequently overlooked than perhaps any other law of nature.

The Sunflower was brought from Peru.

VICTORIAN TREES.

The variations of Eucalyptus, in size as well as in habit, are very remarkable; for while some species are mere shrubs, and form dense brushes on the mountains, there are others which rise to an almost fabulous height in the deep gullies of Victoria and Western Australia. In Baron F. von Mueller's essay on Australian vegetation, that eminent botanist remarks: "The marvelous height of some of the Australian, and especially Victorian trees, has become the subject of closer investigation, since of late, particularly through the miners' tracks, easier access has been afforded to the back gullies of our mountain system. Some astounding *data*, supported by *actual* measurements, are now on record. The highest tree previously known was a Karri-eucalyptus (*E. colossea*), measured by Mr. Pemberton Walcott, in one of the delightful glens of the Warren River of Western Australia, where it rises to approximately 400 feet high. Into the hollow trunk of this Karri, three riders, with an additional pack-horse, could enter and turn in it without dismounting." On the desire of Baron Mueller, "Mr. D. Boyle measured a fallen tree of Eucalyptus amygdalina, in the deep recesses of Dandenong, and obtained for it the length of 420 feet, with proportions of width indicated in a design of a monumental structure placed in the exhibition of 1866; while Mr. G. Klein took the measurement of a Eucalyptus on the Black Spur, ten miles distant from Healesville, 480 feet high. Mr. E. B. Hayne obtained at Dandenong the following measurements of a tree of E. amygdalina: length of stem from the base to the first branch, 295 feet; diameter of the stem at the first branch 4 feet; length of stem from first branch to where its top portion was broken off, 70 feet; diameter of the stem where broken off, 3 feet; total length of stem up to place of fracture, 365 feet; girth of stem 3 feet from the surface, 41 feet. A still thicker tree measured, 3 feet from the base, 53 feet in circumference. Mr. George W. Robinson ascertained, in the back ranges of Berwick, the circumference of a tree of E. amygdalina to be 81 feet at a distance of 4 feet from the ground, and supposed this Eucalypt, toward the source of the Yarra and Latrobe Rivers, to attain a height of 500 feet. . . . It is not at all likely that, in these isolated inquiries, chance has led to the really highest trees, which the most secluded and the least accessible spots may yet conceal. It seems, however, almost beyond dispute that the trees of Australia rival in length, though evidently not in thickness, even the renowned forest-giants of California, Sequoia Wellingtonia, the highest of which, as far as has been ascertained, rise in their favorite haunts at the Sierra Nevada to about 450 feet. Still, one of the mammoth trees measured, it is said, at an estimated height of 300 feet, 18 feet in diameter. Thus, to Victorian trees, for elevation, the palm must apparently be conceded. A standard of comparison we possess in the spire of the Minster of Strasburg, the highest of any cathedral of the globe, which sends its lofty pinnacle to the height of 466 feet; or in the great pyramid of Cheops, 480 feet high, which if raised in our ranges would be overshadowed probably by Eucalyptus trees." Since the publication of these remarks, the report lately furnished by the Victorian Inspector of State Forests, fully confirms all that Baron Mueller has asserted respecting the extraordinary dimensions of Australian trees: "On penetrating into many of the secluded spots

near the source of the Watts, and on the spurs of the ranges in the vicinity, I met with large tracts of valuable timber, enough to supply all ordinary demands for many years, if carefully preserved. In many places, I observed large areas, where the axe of the splitter is yet unknown, and where the timber averages from 100 to 150 trees per acre, with a diameter of from 2 feet to 6 feet, and from 250 feet to 300 feet in height, the most of which are as straight as an arrow, with very few branches. In some places, where the trees are fewer and at a lower altitude, the timber is much larger in diameter, averaging from 6 feet to 10 feet, and frequently trees of 15 feet in diameter are met with on alluvial flats near the river. Many of the trees which have fallen, through decay and the bush fires, measure 350 feet in length, and with girth in proportion. In one instance I measured with the tape line a huge specimen that lay prostrate across a tributary of the Watts, and found it to be 435 feet from the roots to the top of its trunk. At 5 feet from the ground it measured 18 feet in diameter, and at the extreme end, where it was broken in its fall, it is 3 feet in diameter. This tree has been much burnt by fire, and I fully believe that before it fell it must have been more than 500 feet high. As it now lies it forms a complete bridge across a deep ravine."

The gigantic trees of Victoria and Western Australia are certainly to be regarded as curiosities in our Flora, and by some geologists are considered to be the last vestiges of primeval vegetation, which, after having served the purposes of creation in other regions of the globe, have found a resting-place in Australasia. Though no longer indigenous in Europe, however, our Eucalypti are likely to regain a footing in the warmer parts of that continent, for quantities of their seeds are being exported monthly from our shores for the purpose of cultivation in the old world, as many of the species have already obtained an honorable reputation in medicines and the arts, and bid fair to rival the forest trees of other lands.

Our Blue Gum flourishes in the West Indies, and accommodates itself to the climate of New Zealand. Kingsley, in his work "At Last," mentions the circumstance of having passed "the great Australian Blue Gum," which overhangs the road toward Port-of-Spain, in Trinidad. — *From Paper by W. Wools, F. L. S.*

DR. JOHN TORREY, THE BOTANIST.

BY D. C. GILMAN,

President of the University of California.

Dr. John Torrey, the Nestor of American botanists, the peer of the most eminent students of science in this and other countries, "the guide, philosopher, and friend" of hundreds of young naturalists in different parts of the United States, died in New York, the city of his residence, March 10th, 1873, at the age of very nearly 75 years.

In August last, accompanied by one of his three daughters, he visited California, and entered with all the freshness of a young man into the enjoyment of the natural beauties and wonders of this State. He examined its vegetation—natural and cultivated—its big trees, and geysers, its beautiful hills and valleys, its institutions of education and science. His visit was a little later than that of his botanical associate and co-laborer, Dr. Asa Gray, of Cambridge, and was in part coincident with that of Prof. Agassiz, whom he accompanied to a meeting of the California Academy

of Sciences on the first Monday of September.

The main incidents of Dr. Torrey's life are already well known. Born in 1798, he graduated as M.D. in the College of Physicians and Surgeons, and early devoted his intellectual powers to the study of Chemistry and Botany. As early as 1817, he published his first botanical essay—a Catalogue of Plants growing in the vicinity of New York. It has sometimes seemed as if Botany was his chosen pursuit, Chemistry his necessary occupation—or, as if Chemistry was his vocation, Botany his avocation; for in the early part of this century, the position was almost unknown in which a botanist could earn a livelihood from his botanical pursuits. Chemistry was a much more certain dependence for support. Even now, as far as we remember, there are but two endowed professorships of Botany alone: those at Cambridge and New Haven, held by Dr. Gray and Professor Eaton.

Dr. Torrey was successfully connected with several institutions: the Military Academy at West Point, the College of Physicians and Surgeons in New York, the College of New Jersey at Princeton, and Columbia College in New York. During the last twenty years of his life, he was at the head of the Government Assay Office in the city of New York.

He commenced with Dr. Gray the publication of an American Flora, which, on account of the rapid advance of botanical science and the limited number of workers, has not been completed; and he published the two quarto volumes of Botany in the "Natural History of New York." He has contributed in various ways to the advancement of his favorite science, especially by correspondence and counsel with botanists, far and near. His own herbarium is very full, having been enriched with many contributions from governmental expeditions sent to him for identification or description. It is probably surpassed by only two herbariums in the country —those of Cambridge and Washington. Columbia College has been for several years its depository.

Dr. Torrey, in manner and spirit, was a charming example of the true scholar; modest, retiring, co-operative, truth-loving, and devoted to science and not to himself. He was the friend and helper of young students, imparting to them of his own enthusiasm and knowledge. His religious nature was devout and reverent. His patriotism was glowing in the trying times of civil war. His name was above all reproach.

A letter from a New Haven friend, dated March 14th, gives the following particulars respecting Dr. Torrey's closing hours:

"Yesterday I went down to New York to attend the funeral of dear and good old Dr. Torrey, who passed away quietly on Monday. He had been confined to his house for a few weeks, I think some five or six, but did not seem very sick. On Monday he did not seem much worse. The assay reports had been carried to him daily for examination and signature, up to last Saturday, when they were omitted. He wanted them on Monday; he examined them and signed them; at noon his mind began to wander, and later in the afternoon he quietly passed away—his last few hours of life being mentally occupied in some chemical matters which he thought curious and interesting, but which eluded him in his half conscious fancies."

Dr. Johnson says that the chains of habit are generally too small to be felt, till they become too strong to be easily broken.

CULTIVATION OF HEATHS, OR ERICAS.

The genus Erica boasts in Europe of hundreds of varieties and species, all more or less interesting. Here our florists have at present cultivated only a few of them, but they are increasing their lists; and these shrubs deserve to grow, from their beauty and elegance, into the liberal favor of the public. We observe some of this handsome family of evergreen plants, chiefly the white and pink flowered, doing very well in our gardens in the open air, and thickly set with their small but strikingly effective blooms. Their habit of growth is very dense, which adds much to the glowing display of their comparatively minute bell-shaped flowers. They are well adapted for bouquets. In our favored clime they do not require to be removed to greenhouses for winter quarters.

Heaths may be placed in two classes; the soft-wooded or free-growing kinds, and the hard-wooded or comparatively slow-growing kinds. The former require some pruning; the latter none at all—neither leaves nor branches. The best soil for them is our richest garden mould, incorporated with a great portion of fine sand. Water should be freely used, but with discriminating care, as excessive watering is injurious to them; but the soil should be well soaked, and not too often. The essential points in their management are, first, a proper selection of the most showy kinds, which are distinct white, red, pink, purple, or rose color, with dark green foliage; secondly, a careful preparation of ground in which they are to be grown; and thirdly, a location where there is an abundant supply of pure fresh air. We strongly recommend this flowering shrub for general cultivation, supported as we are by the favorable opinions of some of our first-rate florists.

HOW TO MAKE A GARDEN.

BY F. A. MILLER.

It is of frequent occurrence that I am asked for information in regard to the first work in making a garden, or as some say, for making plants grow; and, however uninteresting this subject may be to some, who know, or profess to know all about it, it seems that there are many who really lack this most necessary knowledge, in this particular. I will instance "Amateur," in his late communication to the CALIFORNIA HORTICULTURIST, and I will endeavor to help him out, with what little I know about it.

The first thing to be taken into consideration is, the *actual condition* of the soil, intended for the garden. This may be the common drift-sand so extensively found in San Francisco; it may be sandy loam (no matter of what color); it may be friable clay, or stiff clay; it may be gravelly or rocky soil; and, in the larger cities, it may consist of filled-in material of every description, and oftentimes even of rubbish.

Our common drift-sand is not as bad as some imagine; it contains some fertile and nourishing material. It will sustain vegetation, but that is about all it will do. To produce a luxuriant growth of trees, shrubs, and flowers, it requires some additions. With a good supply of old horse-manure, which is the easiest obtained, I have seen Pinks, Roses, Dahlias, Hyacinths, Gladiolus, and many other flowering plants do very well in our drift-sands; and if the application of manure is renewed every year, plants may be kept in a thriving condition for many years. If economy and limited expense are the main consideration, this may do. The way to proceed

is this: Clear up all the rubbish, including weeds, and during the rainy season (it matters little when) procure a sufficient quantity of old manure (horse-manure is the best), and cover the ground to be cultivated to the depth of about four inches with it. Then dig over the ground to the depth of not less than ten inches, incorporating the manure thoroughly with the sand, and you will have a soil fit at least to cultivate Hyacinths, Dahlias, Gladiolus, Roses, Pinks, Pansies, Mignonette, Fuchsias, Heliotrope, Primulas, Ageratums, Eupatoriums, Stevias, Wallflowers, etc., etc.; but if some additional outlay can be tolerated, such a soil may be very much improved, and in every respect be made better, by the addition of something more substantial; this will consist of good loam to the depth of four inches. But this, in most localities, will triple the expense, where loam has to be carted from a great distance. If this is decided upon, have the four inches of manure spread over the sand first, and then add the four inches of loam. Then proceed to dig over the ground to the depth of at least twelve to fifteen inches, mixing and incorporating sand, manure, and loam thoroughly. A soil prepared in this way will grow most flowering plants and shrubs. But it must be borne in mind that in planting Roses, shrubs, or trees in such soil, holes should be dug of at least two feet in depth, and the bottom should be filled up, to the depth of one foot, with soil consisting of one-third manure and two-thirds of loam, into which the roots may expand in the course of a year or two, and from which they must draw their nourishment after penetrating the surface soil. I will add here, that if the manure obtained is in a dry condition, it should be thoroughly wetted before it is dug into the ground; and in reference to loam, I mean clay which contains a sufficient quantity of sand and porous matter to pulverize nicely with your hand when in a moist condition. There is black loam and yellow loam; both are good, but if yellow loam can be had easily, I would prefer it; however, there is none around San Francisco. Frequently I see black sand sold as black loam; everyone knowing what sand is, it may easily be detected in crumbling it up with the hand. Black sand is not a particle better, and perhaps not so good, as our common drift-sand, and therefore of no value in improving sandy soil.

Although soil prepared in this way will answer for plants and shrubs, and —if some good manure is applied every year (best in autumn)—all of the more suitable and popular varieties will thrive well, if they are taken care of after planting; yet the work of preparing soil may be done still more completely, if a few dollars of extra expense are not a great consideration. Trees and robust-growing shrubs spread their roots rapidly horizontally, as well as perpendicularly into greater depth; and in course of a few years, they will have reached beyond the soil prepared in the manner described above, to where the sand is in its natural condition, and affords little nourishment compared with their advanced growth and development. To avoid this evil, the formation of a suitable subsoil, underlying the surface soil, would prove an excellent remedy. To accomplish this, some of the sand should be removed from the surface, say, to the depth of twelve to fifteen inches, and replaced by a heavy clay, not altogether too stiff, to the depth of about twelve inches, over which sand may be thrown again, say, about six inches thick, which, mixed with the amount of loam and manure as indicated before, will

bring the surface to its proper level. This would make the prepared soil as follows: a clay subsoil of twelve to fifteen inches, with a surface soil or garden mold, consisting of one-third sand, one-third loam, and one-third manure.

Where we have a sandy loam, all that is required to prepare the soil properly is an application of about four inches of old stable manure, which should be thoroughly incorporated with the soil by trenching (or spading) it to the depth of fifteen to eighteen inches.

I will, for fear of getting too lengthy on the subject, continue my suggestions in the next number of the HORTICULTURIST; but will say before closing, that, although the proper time for preparing ground is during our rainy season, and if possible in the autumn, after the early rains, yet it may be done at any time, if the necessary water is at hand to moisten the soil; but manure well before commencing operations, and also water the plants sufficiently during the summer season. The making of gardens in summer time should only be undertaken under unavoidable circumstances. One month of our winter rains is more beneficial to soil and plants, than the artificial irrigation of six months during our dry season.

INFLUENCE OF FISHING ON CHARACTER.

Fishing teaches perseverance. The man in *Punch* who on Friday did not know whether he had had good sport, because he only began on Wednesday morning, is a caricature; but this, like all caricatures, has an element of truth in it. To succeed as a fisher, whether of the kingly salmon or the diminutive gudgeon, an ardor is necessary which is not damped by repeated want of success; and he who is hopeless because he has no sport at first will never fully appreciate fishing. So, too, the tyro, who catches the line in a rock, or twists it in an apparently inextricable manner in a tree, soon finds that steady patience will set him free far sooner than an impetuous vigor or ruthless strength. The skilled angler does not abuse the weather or the water in impotent despair, but makes the most of the resources which he has, and patiently hopes an improvement therein.

Delicacy and gentleness is also taught by fishing. Look at the thin link of gut and slight rod with which the huge trout or "never-ending monster of salmon" is to be caught. No brute force will do there; every struggle of the prey must be met by judicious yielding on the part of the captor, who watches carefully every motion, and treats its weight by giving line, knowing at the same time—none better—when the full force of the butt is to be unflinchingly applied. Does not this sort of training have an effect on character? Will not a man educated in fly-fishing find developed in him the tendency to be patient, to be persevering, and to know how to adapt himself to circumstances? Whatever be the fish he is playing, whatever be his line, will he not know when to yield and when to hold fast?

But fishing, like hunting, is solitary. The zealot among fishermen will generally prefer his own company to the society of lookers-on, whose advice may worry him, and whose presence may spoil his sport. The salmon-fisher does not make much of a companion of the gillie who goes with him, and the trouter does best when absolutely alone; and nothing is so apt to prove a tyrant, and an evil one, as the love of solitude.

On the other hand, the fisher is always under the influence, and able to admire the beauties of Nature. Wheth-

er he is on the cragbound loch or by the side of the laughing burn of highland countries, or prefers the green banks of southern rivers, he can enjoy to the full the many pleasures which existence gives to those who admire Nature. And all this exercises a softening influence on his character. Read the works of those who write on fishing —Scrope, Walton, Dawsy, as instances. Is there not a very gentle spirit breathing through them? What is there rude, or coarse, or harsh, in the true fisher? Is he not light and delicate, and do not his words and actions fall as softly as his flies?—*Spirit of the Times.*

THE HARD AND ORNAMENTAL WOODS OF THE PACIFIC COAST.

BY C. A. STIVERS, M. D.

[Continued from page 81 of March number.]

Before passing to the consideration of the more northern part of the west coast timber-belt, I wish to call attention to a number of other hard woods found growing in Mexico, and which were not mentioned in my previous article. At present, they are but little known (only specimen lots as yet having been received here), and, therefore, my descriptions will, necessarily, be brief.

Cacaguananchi (Palm). This tree is called by some, the "Chocolate Palm," on account of the rich deep chocolate color of its wood. It is straight grained, hard, dense, and from appearances well adapted for small turnings and cabinet work.

Mora (Mulberry). Wood somewhat like the Cedars in grain, but of a much darker color; hard, close, and capable of a fine finish, in which state it resembles Walnut. Cabinet work and turnings.

Caoba (Mahogany). Wood light-colored, grain plain; useful for small trimmings and cabinet work.

Guayacan (Palm). Light, almost a white wood; close grained, dense and hard. It would make good panel work.

Zorillo (Fox-wood). Wood of a light color, fine texture; well suited for panel work.

Arrellano. A light cherry-colored wood, and having somewhat the texture and grain of the true Cherry-wood. Cabinet work, etc.

Palo prieto. Wood light-brown, in some respects similar to the *Amapa prieta* in hardness and texture.

Palo muelo. Light cherry-colored wood, striped with a yellowish tinge, which gives it a very handsome appearance. Hard and close grained, being susceptible of a fine polish. Cabinet and panel work.

Palo fierro (Iron-wood). A very dense, heavy wood, as its name implies. It is extremely durable, resembling in many respects Lignumvitæ; color dark, almost black; useful for ship work, and also where a very hard wood is required; as, in blocks, wheels, pulleys, etc.

Arrallan. A light-brown wood, somewhat like Ash, but lighter in color. Good for wagon work, and for other purposes, where a strong tough wood is required.

Laurelillo (Bay-tree). Wood like Walnut in color and texture. It has also the same finish, and can be used in all cases where the latter named wood is needed.

Tascate (Pencil Cedar). A soft wood, used mainly as pencil casings, for which it is invaluable.

Cabo de Hacha (Handle-wood). Evidently, from appearance, a species of Hickory; strong fine wood, makes good axe-handles, and I should judge, also valuable as a wagon material.

Tepezapote. Wood dark cherry color, resembling very much in character Cherry-wood.

Espina del Mar. Wood of a reddish chocolate color; compact in texture and takes a fine finish. Cabinet work.

Tapinseran listarde and *negro.* Dark ebony-like in color, resembling the true Ebony also in grain and texture, but not in density, being much lighter. Rather dark for cabinet woods, but well adapted for trimmings, frame work, etc.

Amapa blanca. Light, almost a white wood, somewhat resembling Hickory.

Guilochi. Hickory-like wood, apparently of small growth.

Cuate. Like the preceding, but darker in color.

The last three are much of the same character, and are adapted to the same uses.

The next section of this subject will be devoted to the Hard and Ornamental Woods of California.

INSECTS ON HOUSE PLANTS.

The *New York Tribune* gives the following simple plans for the eradication of plant lice, which sometimes seriously trouble house plants in winter. It says:

There are at least twenty different specifics much vaunted for destroying the insects that infest house plants, especially as regards the green Aphides, or plant lice, which, like the poor, are ever with us. In England, the article most in favor at present among florists seems to be what is known as "Gishurst's Compound." Here, we have not got much beyond the tobacco smoke remedy. To make this effectual, the plants should be kept an hour or more in a concentrated smoke, obtained by burning tobacco on red-hot coals. Failure usually proceeds from too brief immersion in the smoke. In air-tight greenhouses, it is practicable to fill an entire room with the smoke, and leave the plants in it all night. A similar result can be effected in a small way in a barrel. An ingenious friend, an amateur "rosarian," covers each of his Roses successively with a sort of paper balloon, which is so constructed as to be capable of more or less expansion, according to the size of the plant, and contains a tin cup, in which he puts hot coals and tobacco. There are people who meet with success in applying certain powders to the Aphis; but the majority of experimenters find difficulty in keeping him long enough under the influence of the application, to say nothing of the trouble of washing the powder off the foliage afterward. The "Persian insect powder," carbolate of lime, and some of the stronger snuffs, have, however, their advocates, who blow them at the Aphides with bellows. Washing with strong soapsuds is a good practice, with plants as well as people, and tolerably safe; for this purpose, in the former case, whale oil soap has a high repute. Suds can be applied, of course, with a syringe; for that matter, a baby might be washed in that way, but it would not be the most advisable method; the better way is, to plunge the thing to be washed into the suds; but in the case of plants, there is this difference—they do better if put in head foremost, and a piece of paper should be tied over the earth of each pot, to keep it from falling out while the plant is soaking. Most people know enough to cut a hole in the paper for the stalk to pass through. Various soaps and solutions are sold for this purpose, containing different proportions of carbolic and cresylic acids, some being so effectual that vegetable as well as animal life succumbs to their influence; and folks who love their plants, as a rule,

prefer to try chemical experiments of this kind upon the plants of other people.

There is a remedy for the Aphis not freely advertised in the newspapers, nor highly recommended in horticultural books, which is not open to certain objections that apply to all the foregoing. It consists in using the eyes sharply and the thumb and forefinger dexterously. On the first trials, especially if plants have been much neglected, this process will seem very much like work, and it may be necessary to hold the left hand so as to catch the insects, while stripping them from the foliage with the right. After being once thoroughly cleaned, the plants can be kept in order if a few minutes are thus employed every day. Within a week the morning's review should not discover a half dozen insects even of the smallest kind. But it will not do to skip a day or two and give a new colony a chance to breed. Occasionally a knowing old Aphis fixes himself in the axil of the leaf or the fold of a bud, where, to get at him, it is necessary to wet the end of a match, the point of a pencil, or even the head of a pin, and touch his back gently with it; you will find him adhering when the instrument is withdrawn. Is it quite certain that it would take too much time to clean your plants with thumb and forefinger? Then, depend upon it, you are trying to keep too many.

OLIVE CULTURE.

Years ago, Mr. Robert Chisholm, of Beaufort, S. C., planted a large number of Olive-trees, which produced most abundantly, and from which a very delicate oil was made. Several trees stood, until quite recently, near the city, upon land formerly owned by Mr. Mauge, of Augusta, and which also produced a large yield of fruit. This demonstrates the adaptation of our section to the culture of this fruit. The great olive-growing regions of France, Provence, Languedoc, and the coast of the Mediterranean, differ but little in their climate from ours, and contain, moreover, a good deal of land of a texture similar with our light soils of Middle Georgia. Light soils of a rocky nature are preferred in France for planting the Olive; as being less liable to damage from frost, and producing the best quality of fruits.

Olives are propagated by seed, which must be prepared before planting, by the removal of the skin, otherwise the oil contained therein will prevent germination. The best method is to feed fresh Olives to fowls which have been placed in coops, the seed being divested by them of all the cuticle. Many varieties will be found in a batch of seedlings, some producing fruit of excellent oil-bearing quality, others very small, fit only for pickling. Hence, reference to the use of the product must be had when setting out the plants. Seedling Olives can be grafted, and thus a uniform quality of fruit secured. Other methods of propagation are often resorted to, such as by cuttings, layers, or suckers, as in all other fruit trees. Seedling trees will attain to greater proportions and longevity than those produced by other means. Olives commence to flower here in April, and are seldom injured by late frosts. The fruit matures from November until January, and can be left upon the trees until March. When the fruit is needed for pickling, it must be gathered before maturity; but if for oil of best quality, they must remain until within one-fifth of being ripe. If left longer, the quality of the oil deteriorates. We will close by giving a list of the differ-

ent varieties commonly cultivated in the south of France, for the different purposes of commerce:

Olea subrotunda.—Very small; very bitter; excellent oil.

Olea amygdalina.—Good for oil and pickling.

Olea racemosa.—Very hardy and robust; product varies as to soil.

Olea Hispanica.—The Spanish Olive; very large; oil very bitter; used only for pickling. This is the variety which is imported here in immense quantities.

Olea præcox—Excellent for oil.

Olea oblonga.—Considered best of all for pickling, but smaller than the Spanish.

Olea regia.—Oil of inferior quality; fruit large, and used only for salting.

Olea atrarubeus.—Tree of low growth; liable to be injured by cold; needs rocky soil; fruit violet black; produces the very finest oil.

Olea viridula.—The Fruit retains its greenish color late; of very good quality for oil or pickling.

SILICA AND THE VEGETABLE KINGDOM.

Silica gives harshness and stiffness to the straw and leaves of cereal grain. When Wheat or Rye is sown where a brush-heap or a pile of logs has been burned to ashes, the straw will be unusually stiff, and the leaves much harsher than other straw which grew in close proximity to the place where the ashes of the brush or wood was left to fertilize the soil. The potash of the ashes and the silica found in the soil are taken up by the growing plants, and form a coating of liquid glass, which is spread evenly over the straw and leaves of the growing grain, as a metallic coat of arms was used in olden times to cover the body of a soldier. When the growing straw of Wheat is inclosed in a thin tube of elastic glass, the innumerable spores which frequently fill the entire atmosphere like flakes of snow, and which produce rust, do not find a congenial place for their lodgement and complete development. But, when the plants do not have access to a generous supply of silica and potash, the stems are so limber that they are easily prostrated by driving storms, so that the ears of grain will be developed only in part. When silica is available only in small quantities, the spores from which *fungi* spring adhere to the leaves and stems, where they find a congenial place for their development, and thus the productiveness of the plants is seriously impaired.

The practical value of silica is further perceived in the production of excellent fruit. If the soil near an Apple or Pear tree that has hitherto yielded knotty and rusty fruit receives a liberal dressing of sand, which supplies silica, and of wood-ashes, which furnishes potash—the substances required to make glass—Nature will employ those ingredients to a great extent in covering the leaves with an elastic glass, and the fruit with a thick, transparent varnish, produced from the silica and potash, which will protect the leaves from blight, and the fruit from rust, scales, and cracks. This fact has been demonstrated repeatedly in some fruit-producing localities, where wood-ashes or coal ashes have been scattered around about Pear-trees and Apple-trees so liberally that all grass and weeds were destroyed.

Flint, sharp sand, and quartz, are composed, for the most part, of silica. Hence the propriety of mingling scouring sand with the soil in which flowers are cultivated. Divest the soil of all silica and alkali where useful plants and beautiful flowers are to be grown, and

not one would attain to perfect development, simply because silica and potash are eminently essential to impart stiffness to the stems, and elasticity and tenacity to the leaves. When Grapevines, for example, which are growing in a sandy soil, have access to potash in abundance, the leaves will appear as tough as leather, and no mildew or rust will ever affect the foliage, or injure the fruit.

In the philosophic world, silica and the alkaline earths have given us the microscopic and the telescopic lenses, which have unfolded to our limited vision the matchless wonders of the planetary universe, and the transcendent beauties of insect life, which can never be appreciated when viewed with the naked eye.—*Industrial Monthly.*

Editorial Portfolio.

In fulfillment of the promise we made to those of our readers who desired initiatory information in gardening on a small scale, we have enlisted the able pen of F. A. Miller in their behalf. The present number contains the first of a series of articles on the A B C of small-plot gardening, and we hope he will be repaid for the trouble he is taking in this work, by a visible improvement in general appearance, a greater display of taste and selection, and of more thriving and luxuriant growth in the small garden plots and front courts in and around the suburbs of the city, when he casts a critical eye over them in his frequent early morning walks. We expect he will be able to define the extent of our city list by these improvements, and we shall by like measure criticise the virtue of his essays. Several other practical gentlemen will from time to time contribute papers on the same subject, and we anticipate much increased interest and pleasure on the part of our readers; but we must reiterate our request, "*Write*"—how else can we know what you want?

We note the following well timed and judicious remarks in our friend, *The Gardener's Monthly*, for March: "There is possibly not so exclusive a regard for mere masses of plants for the effects of their color as there was. Flowers are more loved for their own sakes than formerly; and this will bring up again the Hollyhocks, Chrysanthemums, Dahlias, Pansies, Pinks, Phloxes, Polyanthuses, and other old-fashioned things which the rage for massing nearly drove out of sight. Still the beautiful effects on the garden landscape produced by the newly introduced colored leaves which continue to come, will keep the massing style popular for many years yet. It is found that a very slight variation in colors of a leaf make a remarkable difference in the effect when massed. Thus we may have two plants of two kinds of Coleus together, and we see little difference between them; but when there are a few dozen of each kind in a mass together, we take in the aggregate of the difference, and the effect seems very striking. As these plants vary very much from seed, there will be room for many unique effects in this way from them for many years to come.

"There have been some interesting and novel features introduced into European flower gardens the past year in the employment of dwarf hardy shrubs as permanent borders for flower-beds. The little dwarf variegated Japan Euonymus, *E. radicans variegata*, for instance, makes a charming border for Coleus, Achyranthus, and such other things. Then the Golden Arborvitæs

Golden Yews, and so forth, by a little shearing, such as we give box-edgings, come nicely into play with many brilliant colored leaf plants. There is an additional merit in this style, that the beds do not look so naked in winter as they do when annual plants alone are employed. The Ivy is very much employed for this purpose, and there are now so many varieties of Ivy that a set of a score or more of beds may be given a very varied appearance by the means of Ivy borders alone."

WEIGELA ROSEA.—This beautiful, hardy shrub is a native of China. Mr. Fortune, the celebrated collector, met with it growing in the garden of a mandarin, about the year 1837. This lovely plant thrives in the most desirable manner in any ordinary garden soil, which has the proper degree of porosity necessary to admit of the spread of roots. It is clothed with neat, bright green foliage, of medium size, and extends its branches on all sides, so as to form a round headed specimen, which, for pleasing neatness, may vie with any other shrub we have. In winter the leaves fall off, the plant being deciduous; but they re-appear very early in spring, and are speedily followed by the very handsome, rich, part rose and part white-colored flowers, a good deal resembling the prettiest apple-blossoms, large and abundantly produced, and of surpassing loveliness.

Its cultivation is by no means difficult in any respect. It is very much planted in eastern grounds and gardens generally. It strikes readily from cuttings. As to the position it should occupy, when finally settled, we can hardly conceive one in which it may not be ornamental. As single specimens on grass, in small groups of choice subjects, or the front of shrubbery borders, the Weigela will be equally beautiful. The handsome and numerous large pink bells make the plant desirable in all situations, even amongst such fine and almost constant bearing shrubs and flowers for which California is so deservedly famous.

The genus *Weigela* is included in the beautiful order, *Caprifoliacea*, a group of plants found only in the temperate regions. Its nearest ally is the genus *Diervilla*, composed for the most part of Japanese plants, distinguished by their handsome rose-colored or white flowers. The honeysuckle is the type of the order, but is the only one of the number possessing an agreeable odor. Weigela in the Linnæan arrangement is included in class *Pentandria*, order *Monogynia*.

WOODWARD'S GARDENS.

These attractive gardens are in a continually progressive state; important alterations are the order of the day. A large pool has been constructed for the reception of some huge amphibious mammals, of what particular species we do not know. The aquarium is still in an unfinished state, owing to the want of knowledge and skill on the part of those who *profess* to construct pumping-gear in this part of the world. Great alterations and improvements are being made in the fountain arrangements, and some exceedingly beautiful effects will be produced in this department. The tunnel-way beneath Fourteenth Street has been much increased in width, which will add considerably to the comfort of visitors, as, owing to the steadily increasing popularity of these gardens, the tunnel has lately at times been an uncomfortably tight place. Owing to the backwardness of the spring, the horticultural display

has been unusually retarded, even here, notwithstanding all necessary appliances; but the last few warm days have had a most invigorating effect, and will add considerably to the already attractive appearance of the conservatories, etc.

REPORTS OF SOCIETIES.

Bay District Horticultural Society. The regular monthly meeting of this Society was held on Saturday, March 29th, and was fairly attended.

The members present unanimously resolved to establish a Herbarium of California Plants, under the supervision of Dr. A. Kellogg, the President of the Society; and, in order to make a good beginning with the work, it was agreed that the members should make excursions from time to time, for the purpose of gathering plants. The first of these expeditions to take place on Sunday, April 6th, to Marin County.

Mr. R. Michelsen announced his intention of reading an Essay on the Culture of Camellias at the next regular meeting of the Society.

An interesting discussion followed upon the cause of mildew on Roses, and of the remedies to be applied. It was the general opinion that the disease must be attributed to the sudden changes of temperature; the days being frequently hot, and the nights very cold. The following remedies were suggested:

By Mr. Kidwell: One pound of black sulphur, with a small portion of common yellow soap, dissolved in about sixteen gallons of water, with which the infected parts of the plants should be syringed in the evening after the sun has gone down. Mr. Kidwell said that one application was sufficient.

By Mr. Reimer: Soak ten pounds of tobacco stems in about twenty gallons of water, dissolve in the infusion one pound of carbolic soap, and with this solution syringe the plants every other day for about one week.

Dr. Kellogg suggested a remedy which might prove successful, and was certainly worthy of a trial. He proposed to use sulphurous acid diluted with twenty to thirty times its volume of water, with which the plants should be syringed.

There was a motion made to postpone the Horticultural Spring Exhibition for two or three weeks on account of the backward condition of plants in general. The motion to postpone, however, was lost.

The Missouri State Horticultural Society met at Jefferson City, January 7th, 8th, and 9th, when matters of much interest were discussed.

It will hold its next session in Hannibal, in January, 1874.

FAIRS AND EXHIBITIONS.

At the Annual Rose Show of the Massachusetts Horticultural Society, at Boston, June 17th, special prizes for Hybrid Perpetual Roses were offered by H. H. Hunnewell, Esq. Open to all.

For the best six new varieties, never before exhibited, $40.
For the best six named varieties, $20.
For the next best, $10.
For best twelve of any one variety, $20.
For the next best, $10.

All the roses competing for these prizes, to be exhibited in boxes the same size as those competing for the Society's prizes; the size of the boxes for the six new varieties and the named varieties, one foot six inches long, one foot six inches broad, six inches high at the back, and four inches high at the front.

Special Prizes for Roses, offered by C. S. Sargent, Esq. Open to all.
For the best twenty-four distinct named varieties, three flowers of each, $60. For the next best, $40.

All Roses to compete for this prize to be exhibited in wooden boxes to be four feet long, one foot six inches broad, six and one-half inches high at the back, and four and one-half inches high at the front. The Roses to be placed on a neatly arranged carpet of moss. Regard will be had to the manner in which the Roses are exhibited.

OUR EXCHANGE TABLE.

We perceive that in noticing the *Gardener's Monthly*, in our last issue, we erred in the name and address of the publisher, and we take this opportunity to correct it. This excellent magazine is published by Charles H. Marot, 814 Chestnut Street, Philadelphia.

San Francisco Weekly Visitor, edited by Carlos White, 409 Washington St., San Francisco. $2 per annum. Published every Saturday. A very excellent family newspaper, with abundance of interesting and useful information.

The Evergreen and Forest Tree Grower. Published by Pinney & Co., Sturgeon Bay, Wis. Monthly. Fifty cents per annum. An exceedingly cheap publication, containing a large amount of very useful information on its specialty.

American Agriculturist, published by Orange Judd & Co., 245 Broadway, New York. Monthly. $1.50 per annum. A good magazine, affording abundant information.

Western Agriculturist, an illustrated monthly magazine—plenty of information. Published by T. Butterworth, 430 Main Street, Quincy, Ill. $1 per annum.

Western Planter, a weekly journal, devoted to Agriculture and Horticulture, Stock Raising, and home reading—useful and instructive. Published by R. H. Stowe & Co., Kansas City, Mo. $1.50 per annum.

NOTICES OF BOOKS.

We notice that *The Gardener's Monthly* very strongly recommends "Purdy's Fruit Instructor," by A. M. Purdy, of Palmyra, N. Y. Price, 25 cents. We have not yet seen the book.

The same authority, speaking of the *Garden*, a London (England) publication, by Mr. W. Robinson, says: "England already has at least three, if not more garden papers, that seem as near perfection as anything in this line can be. The *Gardener's Chronicle*, the *Gardener's Magazine* and the *Journal of Horticulture*, seem to cover all the ground. But a perusal of the *Garden* shows that Mr. Robinson has found a large unoccupied tract, and he is cultivating it so well, that in speaking of the superior English papers on gardening, the four must go together."

The April number of the *Overland* is to hand, and affords an unusual amount of excellent reading. "Agricultural Capacity of California" is a highly instructive article, well worthy of general perusal. "The California Indians" maintains its interest. "Pectens," also, are replete with information on this branch of Natural History. "A Geologist's Winter Walk" is highly interesting, and a fine piece of word painting. "Etc." good as usual. In "Current Literature," the "Life of Charles Dickens" is a critique keen and satirical, but Forster deserves it.

Spinach was first cultivated in Arabia.

CATALOGUES RECEIVED.

We have received a very well illustrated and carefully prepared Catalogue of Seeds, Bulbs, etc., from R. J. Trumbull, of the New York Seed Warehouse, 427 Sansome Street, San Francisco. It contains very much useful information applicable to this coast. The prices are evidently very moderate, and the list of *native California shrubs, bulbs, and flower-seeds* is highly interesting.

We wonder if any other of our nurserymen and seedsmen have enterprised so far as to publish a catalogue? If so, we shall be pleased to notice it.

We are in receipt of a set of the Illustrated Catalogues of Messrs Ellwanger & Barry, Mount Hope Nurseries, Rochester, N. Y.

1. Descriptive Catalogue of Fruits.
2. Descriptive and Illustrated Catalogue of Trees, etc.
3. Catalogue of Dahlias, Verbenas, etc., etc.
4. Wholesale Price List.
5. Catalogue of Bulbous Flower Roots.

They are a very valuable accession to our catalogue shelf, and from the established character of the firm, their very extensive and flourishing business, and the quality of the stock sent from their grounds, we feel satisfied that those of our readers who find it convenient to supply themselves from these nurseries, will have every reason to congratulate themselves.

Received, Price List of J. W. Coburn & Co., East Chester Nurseries, East Chester, N. Y.

NEW FRUITS AND VEGETABLES.

Apple—Illinois Pippin.—*The Horticulturist*, for February, figures and describes an Apple under this name, which promises to be a good thing. It is rather large, flattened, yellow, striped with carmine, with a white, sub-acid flesh. In season in January.

NEW AND RARE PLANTS.

Campanula turbinata.—For upward of two months this gem has been producing its charming flowers in the greatest profusion in my London garden, and although now on the wane, it is still very handsome, and the delight of all beholders. It forms a dense compact tuft, never exceeding eight or nine inches in height, blooms included. The flowers are large, erect, bell-shaped, and rich dark purple. There is also a white form, which resembles that described in every respect saving color. I would ask why these are not more grown, for they are perfect jewels in the flower border? They come from the mountain regions of Transylvania. —*Journal of Horticulture.*

Delphinium nudicaule.—This species is a new introduction from California, and to all my readers who have not yet purchased the plant my advice is, do so at once. It is dwarf in habit, seldom exceeding eighteen inches in height; the leaves are somewhat small, palmately lobed, and of a dark green. The flowers are large and freely produced both in terminal and axillary spikes; the sepals and spurs are bright orange, and the petals bright red. This plant, I think, can not fail to please every one when it becomes established, its dwarf habit and brilliant color being great recommendations; but I can not endorse the views I have heard respecting its becoming a good bedding plant.—*Journal of Horticulture.*

Lilium Bloomerianum.—This is another of our native Californians, and we

introduce it here to remark how very rarely our native productions are estimated at home at their true value; this, with several other Californian Lilies, is much in demand in the East and in Europe.

Dr. Kellogg, President of the Bay District Horticultural Society, its discoverer, describes it thus: "This is the most magnificent Lily of the Pacific Coast. Flowers large, nodding, of a beautiful orange hue, and studded with rich, dark spots. It grows from six to ten feet high, and under high culture four to six stems are produced from a single bulb." We notice in an Eastern catalogue that some of the bulbs are valued at $5.00 each.

Graphalium lanatum variegatum.—This is a variety of the old *G. lanatum*, with leaves distinctly variegated with green and white. It is said to be a strong and vigorous grower, and will no doubt become a favorite with those who are seeking for novelties among handsome foliage plants.

Campanula Vidalii is recommended as a perfect gem for the greenhouse. It is a low-growing plant, with racemes of pure white bell-shaped flowers.

Flora of California.—Dr. Brewer is engaged on this good work. It is in such a state of forwardness as to be probably ready for the press by the end of the year. Professor Gray and Mr. Serens Watson are lending a hand, so as to hurry on the work to an early completion.—*Gardener's Monthly.*

Lilium Washingtonianum.—This Lily, not many years ago named and described by Prof. Alphonso Wood, is becoming rapidly popular in Europe. Large consignments of bulbs from California are being sold at high prices in England.

Preserving Flowers in Alcohol.—An excellent way to preserve the form and color of flowers that it is desirable to transport long distances, is to immerse them in a jar of alcohol. A sea captain, who makes frequent voyages to tropical countries, gratifies his friends by bringing them specimens of tropical flowers in this way. It does not answer, however, to remove them from the alcohol; if this is done, they lose color and form at once.

WORK FOR THE MONTH.

BY F. A. MILLER.

This is the last month of the rainy season in California; the showers which may occur occasionally during the beginning of May can not be depended upon. Wherever planting is contemplated, be it in the field, in the garden, or in the pleasure-ground, the month of April gives us the last practical chance to do the work well. The weather being rather uncertain, every precaution should be taken in the transplanting of trees, shrubs, and plants of every kind. All deciduous trees and shrubs should be cut back considerably before planting to insure a thrifty growth. Evergreen-trees and shrubs which are removed and transplanted with the earth around their roots, should receive a very thorough watering immediately after planting, or else there is danger of loss. We must bear in mind that, for some time after transplanting the evergreens, the tree or shrub draws its subsistence from the ball of earth surrounding the roots when transplanted, which frequently form one mass of roots and rootlets, and becomes very soon exhausted and destitute of all moisture; if it rains sparing-

ly, the surrounding soil can not replace the necessary moisture to keep the tree or shrub alive, and, nine cases out of ten, the plant will perish, or suffer severely. By thoroughly saturating the ball of earth as well as the surrounding soil, this difficulty is overcome.

Much moisture is lost in newly prepared ground, from evaporation during warm weather. This is easily remedied by mulching after planting; which is done by covering the surface to the depth of three to four inches with straw or litter of some suitable kind, for, say, two feet around the tree.

In transplanting young seedling-trees, which are usually removed without any soil around their roots, very often great mistakes are made. So-called gardeners pull up the young trees in quantities, and leave them exposed to the sun while planting them out. To avoid this, dissolve some loam in a bucketful of water so as to make a thin mud, into which the roots of the young trees should be plunged, in order to give them a coating, which will preserve the roots in a good condition until they are planted. This rule may be applied to nearly all trees, shrubs, and flowering plants.

Another important item is the properly supporting of trees and shrubs with suitable stakes. Our summer winds are very strong, and blow continually from one direction, giving trees a rather one-sided appearance. This may be obviated to a great extent by proper pruning, which tends to produce a stouter and more compact growth. However, good, strong stakes are necessary; and in setting them, I would advise always to let them lean a trifle toward the direction whence the wind blows.

In spite of all we can do, the wind may, in course of time, give a tree a one-sided and crippled appearance; trees in such condition I have frequently saved by digging around them, at a proper distance, leaving the earth around the roots undisturbed, and then twisting them with the earth half way around, so as to expose the strong and compact growth to the wind. In the course of a year they assumed the original good shape and form. With deciduous trees or shrubs this operation is very easily performed during the earlier part of the winter season.

April is an excellent month to do the chief planting in the vegetable garden. The soil is warm enough to start the seeds into growth, and whatever need transplanting, such as Cabbages, Cauliflowers, Tomatoes, etc., will be greatly advanced by our warm April showers. For early Cabbage, the plants should now be large enough to be transplanted. Some late Cabbage may be sown at this time, in a cold frame. Early Cauliflowers may also be transplanted, and some of the later kinds may be sown again in a frame. Tomatoes should all be transplanted. All tender vegetables must now be sown, such as Beans, Corn, Cucumbers, Melons, Squashes, Peppers, Egg-plants, etc. Sow again some early Radishes and Lettuce to succeed in May. In transplanting young plants or vegetables, such as I have mentioned above, it is well to select a cloudy day, or if these are not of frequent occurrence, the best time of the day is after three o'clock in the afternoon; immediately after transplanting, water carefully each plant with the watering-pot. Young Tomato plants should be shaded for a few days after transplanting.

In the flower garden things begin to look more cheerful. Roses and Pinks are beginning to be plentiful. Pansies are excellent at this time. Violets and Hyacinths are breathing their last; Tulips are in their glory. Some Migno-

nette, Nemophila, Phlox Drummondii, Portulacca, or Lobelia, sown between these early flowering bulbs, will make a very desirable substitute by and by, and will not in any way hurt the bulbs.

Plant out your Dahlias, some of your Gladiolus, Amaryllis, Tuberoses, and other tender bulbs.

Lilies are coming forward now; keep the ground loose around them, and if it is convenient to give them some strong manure water, or a little guano in solution, it will make them thrive as well again.

Do not fail to sow some of the best annuals in groups or masses, wherever there is room for them. They give variety, contrast, and effect. The German Asters, the Larkspurs, Petunias, Primulas, Stocks, Phlox Drummondii, Candytuft, Snap Dragon, Zinnia, and the various kinds of Immortelles, are all most desirable to have.

The plants in the greenhouse and conservatory are greatly stimulated by the warm spring days. On this coast, nine-tenths of the nursery establishments are carried on without artificial heat during winter, and consequently the plants cultivated there show the approach of spring and summer as much as the outdoor plants. In colder countries the temperature is kept up throughout the winter to such an extent as to produce continual growth and development. To accomplish the same thing here, artificial heat is indispensable, although very little of it is required, during the nights and some rainy days even, from which tender plants suffer here the most. Begonias, Cacti, Cinerarias, Chinese Primroses, and Azaleas are now the chief attractions under glass. The Clematis, Torrenya Asiatica, Eranthemum tuberculatum, and the double Geraniums are flowering well with us at this time.

Give plenty of air and a greater abundance of water to all plants which seem to advance well. For most greenhouse plants an occasional and moderate application of guano water is very beneficial.

This is a favorable time to propagate most of the tender greenhouse plants; in fact, for nearly all of such plants as have to be raised under glass. Cuttings of Coleus will now push ahead rapidly, and will soon make better plants than the old ones, which should be thrown away as soon as the young plants are rooted.

If any seeds of tender or hardy plants are on hand, or are expected, do not delay planting them as soon as they come into your possession.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

Soon we shall be visited by some warm weather. The early spring fruits will, in a short time, be present to our imaginations, if not upon our tables. At any rate, the vernal weather will induce us, in lieu of fresh ones, to eat more plentifully of those fruits which the producers, canners and fruiterers have been able to preserve, lay over, and prolong from last year's crops. If it be true that in cold weather we need, and the appetite demands, concentrated carbonaceous food, it is also true, as might be expected, and as many of us know, that the appetite demands, in warm weather, a very different class of articles of food, and the reason is obvious. To be sure our climate is very different from that of the Eastern States, especially in San Francisco, and it is comparatively cool here nearly all the year round. Much hot weather is quite uncommon, and we rarely have in spring or summer more than half a

dozen very hot days together. Still, the thermometer is often high enough at nearly all seasons to make it desirable that a pretty large part of our diet should consist of fruit and vegetables. Oranges then come in to help us in this case considerably. Also Rhubarb, or the Pie-plant, with a much larger accession of vegetables than even we, in this region, could have during our winter months. In the spring, our desire for butter and buckwheat is lessened, and we begin to crave for more acid fruits and green vegetables; yet, how many thoughtless housekeepers go through the same routine of cooking in summer as in winter, with just about as much butter, and lard, and fat beef, and even pork, and rich gravy, and flour-puddings with sauce; not because they like it as well, or think it is wholesome, but only because "their mothers did so before them."

We need, in summer or winter, whether using muscles or brains, or neither, every-day food containing carbonates for the lungs, nitrates for the muscles and tissues, and phosphates for the vital powers; but we need them in very different proportions, according to the state of the temperature in which we live, and our habits of life. But man, who has intellect, is expected to understand the laws of his being, and to adapt his food to the wants of his nature, varying it according to circumstances. This we should learn to do even in the moderate, cool, and equable climate of San Francisco, and still more so in the much more generally warm climates of our coasts and valleys, differing so much as they do as to locations.

But we must not, in our divergence from our main subject—fruits—and touching upon kindred subjects, forget our leading theme, the market; yet, a few words more, as to the time for eating fruit; we think, the morning is the best; but we are not quite sure, though. The afternoon is good. But we do not recommend fruit with the dew upon it. Let the fruit get its own breakfast before you eat it yourself. It breakfasts on early sunshine and dew. It takes these things in, and smiles upon itself and the world, just as you do about half an hour after a pleasant breakfast. Eat it, then, while it is in this humor—by no means in the raw and early morning; thus you have the young freshness and virgin flavor of the fruit. It has another character later in the day, when it is filled with sunshine; then we think it is sweeter.

We must really not delay any longer, however, in treating on our more practical, matter of fact, and more tangible subject—our markets. Behold, then, our readers, what we can set before you this month, for your judicious and doubtless well discriminating palates.

There are some changes in the fruit and vegetable markets since last month, but they are not very important. The most notable fact is the advent of Strawberries (the Longworth Prolific, as usual), on the 12th of March. Their appearance is a week earlier than last year. The consignment of that fruit was light, of course, and, when so early, their quality denotes plainly, both in complexion and taste, that they have not yet had a sufficient bathing in the solar beams. The price may be supposed to be rather on the fancy order—one dollar and fifty cents per pound—but by the time this number of our monthly reaches the public, they will be enjoying this fruit at a more moderate price.

The first cargo of this year's crop of Tahiti Oranges arrived about the 9th ult., and though nearly always inferior

to those of our southern, and some favored spots in our middle and even more northern counties, they meet with a tolerably ready sale at satisfactory prices.

Lemons can be obtained a little lower than last month, owing to the arrival of a considerable quantity of Limes, which also are cheaper.

Cocoanuts are coming in large loads.

Apples are not plentiful, and the best command $3.00 per box, while inferior fruit will bring $1.50 to $2.00 a box.

Pears are about exhausted, and nominally quotable at $2.50 to $3.50 a box.

Bananas have come in lately in a pretty large quantity, and are of fine quality, at 75 cents per dozen.

Asparagus is abundant, and now sells at moderate prices.

We observed new Cucumbers, fresh and crisp, for the first time on the 11th ult. They, probably, have never been much earlier than this in any former season. They were selling at $2.50 per dozen. It would not answer, at this price to cut up, and, with salt, pepper, and vinegar, prepare these nicely, and then, according to the recipe of some over-careful sanitary-protective folks, cast them to the porcines, so as to inflict no injury on the human family. This would be rather too extravagant an idea in every point of view. We ourselves think Cucumbers have been rather overrated as to their terribly deleterious effects on man's digestive organs. At the present prices for these esculents, however, it would seem to be unnecessary for us to preach moderation in their use; the consideration of the depleting effects on the pocket will preclude the necessity for this.

Rhubarb is in good supply, and the price is speedily becoming more moderate.

Correspondence.

To the Editor of the California Horticulturist:

Dear Sir:—In the March number of the California Horticulturist, I notice a communication signed by *Philoflora*, who seems to expect more work from our Agricultural and Horticultural Societies, for the public good; and would like to see more extensive reports from the Secretaries of these Societies. The suggestions are timely and valuable. Unluckily our practical men will neither spare the time, nor take the trouble to put their knowledge and experience to public use. Our scientific men consider the subject of Horticulture beneath their dignity, and our rich men can not *afford* to expend a dollar unless they see the prospect of two in return.

The consequence is that the Secretaries of these Societies, with the aid of but one or two other members, have to carry on all the work which is done, and for which they receive the valuable consideration of re-election, if they choose to accept it.

However, here is a suggestion for Mr. "Philoflora." If he is a member of the Horticultural Society, let him bring the "Pegging down of Verbenas" question before the monthly meeting; and if he is not a member, then let him join immediately, for the very fact of *his* becoming a member would, undoubtedly, increase the usefulness of the Bay District Horticultural Society.

So long as a society has to struggle for its mere existence, but little progress can be expected in public usefulness. Our Horticultural Society ought to number 1,000 members instead of only sixty; then the gatherings would doubtless be more numerous, and necessarily more interesting and beneficial. By degrees, I suppose, this more desirable *status* will be attained. Horticulturist.

Editorial Gleanings.

WATER RIGHTS.

From the new Code, we copy the following provisions, relating to water rights:

Sec. 1410. The right to the use of running water flowing in a river or stream, or down a cañon or ravine, may be acquired by appropriation.

Sec. 1411. The appropriation must be for some useful or beneficial purpose, and when the appropriator or successor in interest ceases to use it for such purpose, the right ceases.

Sec. 1412. The person entitled to the use may change the place of diversion, if others are not injured by such change, and may extend the ditch, flume, pipe or aqueduct by which the diversion is made to places beyond that where the first use was made.

Sec. 1413. The water appropriated may be turned into the channel of another stream and mingled with its water, and then reclaimed, but, in reclaiming it, the water already appropriated by another must not be diminished.

Sec. 1414. As between appropriators, the one first in time is the first in right.

Sec. 1415. A person desiring to appropriate water must post a notice, in writing, in a conspicuous place at the point of intended diversion, stating therein:

1. That he claims the water there flowing to the extent of (giving the number) inches, measured under a four-inch pressure;

2. The purpose for which he claims it, and the place of intended use;

3. The means by which he intends to divert it, and the size of the flume, ditch, pipe, or aqueduct, in which he intends to divert it.

A copy of the notice, within ten days after it is posted, must be recorded in the office of the recorder of the county in which it is posted.

Sec. 1416. Within sixty days after the notice is posted, the claimant must commence the excavation or construction of the works in which he intends to divert the water, and must prosecute the work diligently and uninterruptedly to completion, unless temporarily interrupted by snow or rain.

Sec. 1417. By "completion" is meant conducting the waters to the place of intended use.

Sec. 1418. By a compliance with the above rules, the claimant's right to the water relates back to the time the notice was posted.

Sec. 1419. A failure to comply with such rules deprives the claimant of the right to the use of the water, as against a subsequent claimant who complies therewith.

Sec. 1420. Persons who have heretofore claimed the right to water, and who have not constructed works in which to divert it; and who have not diverted nor applied it to some useful purpose, must, after this title takes effect, and within twenty days thereafter, proceed as in this title provided, or their right ceases.

Sec. 1421. The recorder of each county must keep a book in which he must record the notices provided for in this title.

Sec. 1422. The rights of riparian proprietors are not affected by the provisions of this title.

The Season of Flowers. — Nothing in Nature is so entrancing to the senses, so inspiriting to the mind, as a well planned garden, dotted with brilliant flowers. Our fields are now decked in vernal green, gaily sprinkled with bou-

quets of choicest wild flowers, while the gardens show a refinement of taste in Floriculture that merits and receives the admiration of our numerous city visitors. Flowers, says Chambers, are the ornament of vegetable existence, and have in all ages been cultivated by persons of leisure and taste, for the beauty and variety of their forms, colors and fragrance. While generally healthful and exhilarating, from being pursued in the open air, flower culture is justly reckoned a pure and harmless recreation, which, by leading to the tranquil contemplation of natural beauty, and diverting the mind from gross worldly occupations, has a positive moral, and, therefore, highly beneficial tendency. It has also the advantage of being alike open to the pursuit of high and low, the peasant and the peer, the overtoiled man of business, and the industrious artisan. It may be followed with equal enjoyment by both sexes, and on every imaginable scale, from the tiny front plot to the princely greenhouse, and exquisitely varied parterre. The natural grace, simplicity, and attractive coloring of flowers have afforded endless themes to moralists and poets, and volumes have been written to show how many associations of feeling, simple and sublime, these beauteous subjects are calculated to excite. Few natural objects are more poetical, or more calculated to refine the taste, than flowers. Therefore, all should cultivate them, in greater or less proportion, as their time and means permit.—*Alameda Encinal.*

A Simple Method of Warming Greenhouses.—The London *Grocer* suggests that greenhouses, containing half-hardy plants, and in which no regular method of heating exists, may be warmed even during a hard frost by lighting and distributing a dozen or so common oil lamps, at convenient localities. In selecting these lamps they should be chosen with vases large in proportion to the size of the flat wick, in order that they may continue burning all night without refilling or other attention. It will be readily understood that, whether one or many lamps are used, the total amount of heat given off is proportionate to the quantity of oil burned, provided the combustion is complete. And in using a lamp, all the heat of combustion is utilized; none goes up the flue as with stoves or fire places.

The same journal, we notice, refers to good kerosene oil as a very carefully and skillfully refined petroleum product. As this material, in addition to other advantages, possesses that of safety, it would be especially suitable for use as above described.

Treating Hyacinths after Flowering. In replying to a lady querist on the above subject, the *Gardener's Monthly* says: "Hyacinths, as we get them from Holland, have not been allowed to flower, and hence have much concentrated strength in them, which they never regain after once flowering. But they will produce some flowers another year, if well cared for. As soon as the flower fades cut away the stem, and give the plants all the benefit of light possible, and keep the soil rich by a light top-dressing of manure, and as soon as possible after the ground opens and frost is certainly gone, plant them in the open ground. The offsets will, however, make the best bulbs. Plant these in spring in very rich ground, and in the fall replant again in rich earth, picking out the flower-buds which it makes the succeeding year. The season following they will approach the

foreign bulb in excellence. We have not so far been able to equal the Hollanders in raising bulbs, but Mr. Such was experimenting some years ago with some hope of success."

Floriculture.—All lovers of flowers must remember that one blossom allowed to mature or "go to seed" injures the plant more than a dozen new buds. Cut your flowers then, all of them, before they begin to fade. Adorn your rooms with them; put them on your tables; send bouquets to your friends who have no flowers; or exchange favors with those who have. You will surely find, the more you cut off the more you will have. All Roses after they have ceased to bloom should be cut back, that the strength of the root may go to forming new roots for next year. On bushes not a seed should be allowed to mature.—*Scribner's for March.*

Shade Trees for Nothing.—Colonel Henry S. Fitch has offered to the Board of Supervisors from two to four thousand young Gum-trees, provided the Board will have them taken up and transplanted on the county road. He is also disposed to be equally liberal with the town authorities of Alameda. It is not too late to plant the Eucalyptus, and we should be pleased to hear that the Boards of both county and town, had accepted the Colonel's liberal offer. The trees are on the Fitchburg property.—*Alameda Encinal.*

Pampas Grass.—A French gardener recommends that the tufts of Pampas Grass should be burned in autumn and left alone; in spring they will push up earlier and better than if protected with mats, or otherwise.

Leguminous crops, as Peas, Beans, Vetches, Saintfoin, Clover, etc., all partake of the character of the Pea, which may be accepted as the type of this family of plants. The prevalent mineral constituent of these plants is lime; for this reason they are sometimes called "lime plants." As we might for this reason expect, these plants flourish most luxuriantly on lime soils, and are cultivated most successfully in limestone districts. For the same reason, the addition of lime to soils containing but little of this substance greatly favors the growth of these crops. Another mineral constituent required by these plants is sulphur; hence, the addition of some combination of sulphur is generally attended with benefit to a crop of this description. A substance well fitted for this purpose is gypsum, or plaster of Paris. This compound, as already noticed, contains sulphuric acid and lime, and on this account may be regarded as a special manure for leguminous plants.

In one of our exchanges we find the following definition of an inch of rain: An English acre consists of 6,272,640 square inches; and an inch deep of rain on an acre yields 6,272,640 cubic inches of water, which, at 277,274 cubic inches to the gallon makes 22,622.5 gallons; and, as a gallon of distilled water weighs 10 pounds, the rain-fall on an acre is 226,225 pounds, avoirdupois; as 2,240 pounds are a ton, an inch deep of rain weighs 100.993 tons, or nearly 101 tons, per acre. For every 100th of an inch a ton of water falls per acre.

The Rose gardens of Adrianople cover 14,000 acres, from which the Paris perfumers distil their sweets. They are soon to be greatly extended.

Restoring Waste Places. — In the Departments of the Hautes-Alpes, in France, an interesting experiment has been made for the restoration of lands that were desolated by the removal of forests. As the years rolled by, village after village was deserted, until the department had lost 11,000 of its population. The peasantry opposed with the greatest violence any attempt at the replacement of the forests, and the government was obliged at last to force them to returf the barren districts. The result is said to be most satisfactory: the covering of sod has retained the rain, instead of allowing it to run off in torrents, and the desolate, barren districts of the last few years are resuming the luxuriant vegetation with which they were clothed in olden times.—*Scribner's for March.*

The Way the Forests Go.—Some idea of the vast extent of the lumber trade, and the rapidity with which our great forest trees are being consumed, may be had if we notice the product of a single saw-mill in Michigan, that of A. W. Sage & Co., in the Saginaw Valley. This firm does business in Brooklyn, N. Y., and in several other cities. The mill alluded to cuts and turns out as high as 370,000 feet of lumber in a single day. Five engines and eight boilers, yielding six hundred horses' power, together with the services of three hundred men, are required. The buildings are very extensive, lighted with gas, and supplied with every convenience for work that ingenuity can suggest.

The *Gardener's Monthly* calls attention to the fact, that where the Cucumber grows wild, it spreads over bushes and trees, and the growth and product are enormous. All plants with tendrils prefer to ramble in this way. He adds, "No one who has not tried can have any idea of the luxuriant growth of a Cucumber when trained to a stake which has a set of stubby side branches left along its length. Some which the writer saw, might be taken at a distance for some vigorous kind of ornamental gourd—and the crop was enormous."

Importance of Leaves. — McIntosh says: "In plants the leaves act as lungs in animals; that the preservation of the leaves of vines, as indeed of all other trees and plants, is of vast importance —indeed so much so that the removal of a single leaf tends to lessen the vigor and energy of the tree."—*Exchange.*

Twelve quarts of soot in a hogshead of water, will make a powerful liquid manure, which will improve the growth of flowers, vegetables or root crops. In either a liquid or solid state, it makes an excellent top-dressing for grass or other cereal crops.

The *Economista d'Italia* says, there are in the Italian Kingdom 80,000 acres of turf applicable for fuel, which, when compressed, will be found from twenty-five to thirty per cent. cheaper than coal at the present price.

Experiments often repeated have shown that a plant may be raised in a flower-pot from a seed, and receive no nourishment but pure water, yet shall far exceed in weight all the soil in which it grew.

Half a million gallons of wine and brandy were exported from California in 1872.

NURSERY AND RESIDENCE OF W. F. KELSEY.

Watkins, Photo. OAKLAND, CALIFORNIA. For Cal. Horticulturist.

THE

California Horticulturist

AND FLORAL MAGAZINE.

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SUMMER FLOWERING BULBS.

BY F. A. MILLER.

It is gratifying to notice that during this season the inquiry and demand for early flowering bulbs, such as Hyacinths and Tulips, has been on the increase, and that our amateur gardeners, particularly the ladies, are progressing in their appreciation of these early gems of the garden. But how about the "summer flowering" bulbs? These seem to be very much neglected; here and there I see a few of the old varieties, which were introduced here some ten years since. With the exception of a very few of our most attentive amateur florists, no one seems to care for them; and why? Are they less beautiful? are they more difficult of culture? No, certainly not. In our exhibitions the florists have made very brilliant shows with Gladioli and Dahlias, and hundreds, nay, thousands, admired them as most attractive features; but this was as far as their appreciation advanced.

I know that some of our florists imported extensive collections of Gladioli, and after cultivating them for a year, have offered them for less money than they could be purchased for in the East; yet, notwithstanding the depreciation in the price, nine-tenths of the bulbs offered are on hand. The same may be said of Pæonies and Dahlias, all of which are really indispensable as hardy summer flowering bulbs; a garden without them is indeed incomplete.

There is, however, yet time to plant some of these bulbs. In fact, Dahlias should not be planted until the first part of May, and Gladioli may be planted out during every month of the year, so as to have them in bloom at all times. This is one of the advantages we possess in our California climate. If any of the readers of the CALIFORNIA HORTICULTURIST have not yet devoted any space to the cultivation of these bulbs, I would suggest a trial of them. For a small garden ten or twelve different varieties of Gladiolus will be sufficient. Select distinct varieties, *i. e.*, of distinct and varied colors. The following varieties will do very well for a collection of this kind:

Dr. Lindley.—Delicate rose color, blazed with carmine and cherry.

El Dorado.—Fine, pure yellow, striped with purple.

Adonis.—Light cherry, marbled with white.

Louis Van Houtte.—Velvety carmine, flowers for a long time.

Mazeppa.—Rosy orange, large yellow stains, striped red.

Rebecca.—White, shaded with lilac.

Lord Byron.—Brilliant scarlet, lined with pure white, very fine.

Goliah.—Light rosy red, striped with carmine, fine.

Daphne.—Light cherry, red stripes, stained with crimson.

Duc de Malakoff.—Brilliant light scarlet, base and throat white.

Brenchleyensis.—Vermilion scarlet.

All of the above may be obtained here at moderate prices. I would advise to plant such a collection in groups of three or four at intervals of about one month, in order to have them in bloom throughout the whole summer. The bulbs should be covered about three inches, and the distance between the bulbs should not be less than nine inches. The flower-stem of the Gladiolus is top-heavy, and a neat stake for its support is necessary, particularly in our climate, where heavy winds prevail. Bulbs, which are kept on hand for future planting, are best preserved in an airy and dry place without any covering. Such is my experience on this coast.

In extensive grounds the Gladiolus should be planted in groups of from twenty to thirty, and there is no class of flowering plants which presents a more brilliant effect.

It is unnecessary for me to say here that the ground should be kept in a mellow and clean condition, by frequent hoeing; every one who cultivates plants knows this to be indispensable. Bulbs planted during the months of March and April do not need any artificial irrigation; but, if planted during the month of May, and later, a thorough watering once a week is indispensable, until the first flowers begin to open; after they have done flowering, the watering may be discontinued. Cut off the flower stalks immediately after flowering, in order to throw the entire vigor of the plant into the formation of new bulbs. The most of the Gladioli form several bulbs during the summer season, which will flower in the following year.

Another very important class of summer flowering bulbs are the well-known "Dahlias," which deserve a place in every garden, however small or large. The Dahlia, as a flower, is perfection in form and rich in color, and produces its exquisite blooms from July until November in great abundance. There is still time to plant them. In fact I prefer to set them out during the month of May. The varieties of color, and the different shades and tints, are perhaps the most numerous and distinct of all the flowering plants under cultivation.

The Dahlias are generally divided into three classes, the Show Dahlias, Fancy Dahlias, and Bouquet or Pompone Dahlias.

The *Show Dahlias* are those of one color, and include mostly the varieties in which a certain color is largely predominant. The flowers are large, and the plants of robust growth, varying in height from four to six feet. The leading colors are pure white, deep yellow, purple maroon, scarlet, buff, amber, rose, and crimson in all the various shades. At some future time I will give the names of the most approved varieties on this coast.

The *Fancy Dahlias* are those which produce variegated flowers of two or more colors; striped, flaked, spotted, dashed or tipped. The markings of these are really exquisitely pleasing to the eye. Of those which have for several years been cultivated here, the best are, *Striata formosissima*, purple

and white; *Remembrance*, pink, white stripes; *Bride*, white, shaded with lilac; *Gem*, scarlet, tipped with white; *Jessie Atkins*, yellow, edged with red; *Splendens*, blush striped, and spotted with red; *Queen of Beauties*, white, edged and striped with lilac.

The *Bouquet* or *Pompone Dahlias* are of a more dwarfish growth, and their flowers are small in comparison with the foregoing varieties. They are very useful for bouquets and floral decorations. Some of the best varieties are, *Little Mistress*, *Little Minnie*, *Alba floribunda*, *German Youth*, *Jeannette*, *Little Gem*, *Little Fireball*, *Little Madonna*, etc.

The treatment of Dahlias is very simple; almost any kind of light soil will suit them. I have seen very fine flowers from plants grown on our poor drift-sands, to which good old manure was added. In autumn the roots should be taken up, and after leaving them exposed for two or three days to the atmosphere, they ought to be stored away in a dry, cool place, where they can remain until the following spring. Before planting, the ground should be well worked over to a depth of at least fifteen or eighteen inches. Divide up the old roots in such a way as to leave an eye; or, if the eyes are not yet visible, a portion of the woody crown to every piece of root which is intended to be planted. If several stalks spring up from the root, it is well to remove all but one, in order to throw more vigor into the plant, and produce more perfect flowers. As soon as the flowers begin to fade, they should be cut off, as old and decaying flowers exhaust the plant. If you want first-class flowers, do not allow too many to develop themselves at one time.

In small gardens a few of the best varieties ought to be planted in or near the centre of the larger beds. In extensive grounds I am decidedly in favor of planting them in rows along certain walks, or in groups. Dahlias must be provided with strong stakes as soon as the stalks are eighteen inches high, and a still better way is to stake them when the roots are planted.

There are many other summer flowering bulbs which deserve a place in our gardens, and which are altogether too much neglected. As such let me name the Lilies, the Amaryllis, the Tuberoses, and the Pæonies, all of which are very popular in the gardens of Europe and the East.

Of Lilies we have the magnificent *Lilium auratum;* the old but ever favorite *Lilium candidum*, of a pure white color; the elegant *Lilium tigrinum*, popularly called Tiger Lily, yellow with brown dots; *Lilium lancifolium*, of various colors; *Lilium atrosanguinium*, dark red, marbled with orange. Let me add to these our native California Lilies: *Lilium Washingtonianum*, a most graceful and fragrant white Lily of the Sierra Nevada; *Lilium Humboldtii*, of a fine orange red color, with dark spots, very graceful; *Lilium pardalinum*, one of the prettiest Lilies under cultivation, petals well reflexed, color orange yellow with dark spots, and the end of each petal distinctly scarlet; *Lilium parvum*, a small and very graceful cup-shaped Lily, of a delicate bright orange yellow.

Lilies, unlike Dahlias, should remain in the ground for several years, as not until the second year can fine flowers be expected. In this respect *Lilium auratum* makes an exception, as I have seen very fine trusses of flowers produced from the first year's planting.

The Amaryllis family is as yet very meagerly represented in our gardens; in fact they are very little known here. These, as well as the Pæonies, should have been planted ere this. I will,

therefore, not now say much about them, but reserve more extended remarks on their cultivation and varieties for a future time.

THE AURICULA—(PRIMULA AURICULA.)

"See, when arranged in sparkling dust and velvet pride,
Like brilliant stars arranged in splendid row,
The proud Auriculas their lustre show."

This beautiful gem of Flora is a native of the Swiss Alpine Mountains, and is supposed to be a variety with *Primula Helveticus*, *Nevis*, and *Viscosa*. Its original color is orange yellow, not much unlike the English cowslip, and not over prepossessing in appearance, unless in its pristine state. The Auricula was imported into England in the sixteenth century, and was found susceptible of much improvement by cultivation. Since that time much care has been bestowed upon it by florists, and the perfection it has attained is astonishing—so much so that it has become one of the leading florist flowers in both Europe and America; and instead of the original color, is now one of the most beautiful imaginable.

In visiting Miller & Sievers' floral establishment a few days since, we found some very handsome seedling Auriculas. They were of large size and beautifully centered and bordered. Our climate in California seems to suit it well—much better than England's, but this will not surprise anybody. In the summer this plant delights in the shade, and must be very regularly watered. The best soil for it is from the woods, more particularly in the ravines, where rotten wood and leaves are washed, with a mixture of sand or fine stone. This plant can be extensively cultivated by seed, by most gardeners and amateurs, and is well calculated for exhibition and for prizes.

There is some difficulty in getting the seed to germinate if not fresh, as it may occur sometimes that seeds will be one or two years before they come up unless forced in a hot bed.

When the seedlings have formed four leaves they should be transplanted into thumb pots, and be kept in the shade and never suffered to become dry, nor be placed where the rain falls, or they will be washed out of the soil. Seedlings will flower the second season. The soil recommended for full-grown plants will also do for seed and seedlings. We have seen one hundred kinds of the finest Auriculas at one time on a stage in a garden in England. Such a sight never before met our eyes, but we hope to see it again some day in California. It can be done as easily here as in England. Indeed everything is more suitable for it here than in England, with irrigation.—*Pacific Rural Press.*

VENETIAN SUMACH—(RHUS COTINUS.)

BY DR. A. KELLOGG.

This very ornamental shrub, so far as we know, is considered an exotic, indigenous to Siberia, Austria, Lombardy, etc. The writer, in early days of the organization of the California Academy of Sciences, presented a specimen (in fruit only) to the old Herbarium, obtained from Bexar Pass, Texas, found native on the arid mountains of that section. This is probably the same as the *Smoke Tree* of our gardeners and ornamental nurserymen. It is, however, to its commercial importance that we desire to invite a moment's attention. Prof. Carr and many others, who desire to render practical service to our agricultural and industrial interests, continue to urge a more varied and independent culture. These hints are being

executed, relative to new industries, with unparalleled vigor by our enterprising agriculturists.

The modern Athenians use this wood (Fustic) for dyeing wool a most beautiful rich yellow, and the whole plant is used in Italy for tanning sheep and goat skins into morocco. We import annually about 60,000 to 75,000 bales of 180 lbs. each. The price here by the ton has been from $75 to $125 per ton; at retail much higher. No adequate substitute has ever been found for the life-giving vigor, soft, velvety, and elastic properties, it communicates to the skins, even in very small relative proportions to other stronger and more drying tans. On a coast with Italian and Sicilian skies—a climate often too arid at the south coast for surety in other crops—certain dry season to secure harvests in prime condition—hides of almost illimitable supply at our doors—limestone, and red clay, and sandstone soils—modern inventions for labor-saving uses, and hot, sunny, rocky hillsides, or bottom lands, asking the careful hand of culture—the pioneer in this enterprise will prove a benefactor to the State and nation, and reap a rich reward. A word of detail only, and we dismiss a subject full of the deepest interest to the people of this coast. In the Agricultural Reports for 1854, p. 34, *Rhus coriaria* is quoted as the name; if so (and we have no access at this writing to verify), it is a mistake. The species probably intended is *R. coreacea*, which is synonymous with ours. But if *R. coriaria* is really the plant the writer refers to, it may be another of similar value. Indeed, many other species, also those commonly native to the United States, are thought to be of equal value; but we deem it prudent to recommend only the world-wide and best renowned article.

Seeds may doubtless be had at the Agricultural Department, at Washington; or from Sicily, Aleppo, or anywhere in the south of Europe. Also propagated by cuttings from roots, stems, or by layers, etc.

Seeds are best, started in beds at any time with due attention. The most proper season for transplanting is November, December, and January; of course, the best time is the first of the rainy season. Plant two to four feet apart in the rows, and rows four to six feet apart, for space best suited to plow and harrow, or horse-hoe—say, two or three cleanings. In Sicily, the rainy season closes in May, like ours; when the crop is laid by—previously hoed as stated. The crop is gathered in July and August—cut four to six inches from the ground, and laid in handfuls, not spread out, for a day or so to dry—not allowed to bleach. The *leaves of young sprouts* that spring up vigorously every year, are the only parts used (as they are free from dead or decaying leaves of the older trees). Care on this point, and a dry climate like ours, where no casualty of rain ruins an occasional crop, has given Sicily a staple reputation in the markets of the world. There are, nevertheless, those who adulterate the article, and out-ape the ape. The whole twigs, leaves and all, are also cut up, and used for tanning. To a home market this might perhaps be the most feasible.

Since its cultivation in Maryland and Virginia, the price of the foreign has fallen, as it proves inferior, except for its lighter and clear hue—the American being a little greenish yellow. Yet, the latter has risen 20 to 40 per cent., while the Sicily has correspondingly fallen.

We are obliged to omit much of details, already too lengthy for a mere suggestive article.

CINCHONA CULTIVATION.

BY C. A. STIVERS, M. D.

In all the range of medicinal remedies, not one is so important and useful to mankind as the Cinchona bark, with its alkaloids, *Quinia* and *Cinchonia*. This importance, taken in connection with its comparatively limited natural area of growth, has called attention to the necessity for the cultivation of the Cinchona-tree in different parts of the world.

Many of the European governments (more especially that of Great Britain), have been engaged for the past ten years in establishing governmental plantations of this valuable tree, and have also endeavored by all possible means to encourage its cultivation by private enterprise. In the United States, as yet, no efforts have been made in this direction; partly from the fact of our peculiar form of government, which places so many "ifs," "ands," and "buts," in the way of such experiments, and partly for the want of a suitable climate in which to test it.

The first fault will have to be overcome by educating the people in such matters, until they shall see the importance and need of government aid. As for the second, I think that is already obviated in the possession of California, which seems to have all requisite climatic qualities for the successful cultivation of the Cinchona-tree. With a view to call the attention of the people of California, and possibly, by that means, also that of the State and General Governments to this subject, I have selected your journal in which to give a brief outline of the history of the tree, and also to show what has been done in its cultivation by Great Britain, in the East Indies.

Cinchona belongs to the genus of trees of the natural order *Cinchonaceæ*. There are a number of species or varieties; the principal ones, and those most cultivated, being *C. calisaya*, *C. officinalis*, and *C. succirubra;* the best of which is the *C. calisaya*. These trees are only found native on the west coast of South America, between south latitude 20°, and north latitude 10°, on the eastern slope of the second range of the Cordilleras. They are evergreen trees, having a leaf somewhat similar to the laurel. The flowers are white, rose-colored, or purplish, having a very fragrant odor, and are produced in panicles. Some of these trees are of a large size, while others are but small shrubs. The gathering of the bark, which is carried on during the dry season, is mainly done by Indians, the trees being cut as near the surface of the ground as possible, and the bark is then stripped off and dried. An after-growth springs up from the roots, but does not attain the original growth.

As early as 1835, Dr. Royle suggested the introduction of the Cinchona-tree into India, for the purpose of cultivation, and some plants were taken there by Mr. Markham. The plantation, however, from some cause failed, and not much was done in the matter until 1861, when a number of plants were introduced. In 1863, there was a permanent plantation of over 40,000 trees growing on the Nilgherry Hills of South Hindostan, besides those of Bengal.

About this time a sample of bark, sent from India to England, was examined, and found to yield a percentage of *Quinia* equal to that grown in South America. Thus the success of Cinchona cultivation in India was fully demonstrated, and has since then been still further proven by the extended

plantations in different parts of the country.

Within the past three months Mr. M'Ivor, Superintendent of the State Plantation in Southern India, has notified the English Government that he was prepared to ship 25,000 pounds of the bark, as a first consignment, to be sold at public auction, with a view to test its quality and value. In concluding this article, it would be well to give your readers a synopsis of a report from C. B. Clarke, botanic gardener, Calcutta. It contains many valuable hints in regard to the growth and management of the trees, which, coming from the source it does, can be relied upon:

REPORT *on Cinchona Cultivation in Bengal. From C. B. Clarke, Esq., M. A., Officiating Superintendent, Botanic Garden, and in Charge of Cinchona Cultivation in Bengal, to the Secretary to the Government of Bengal.*

SIR:—I beg leave to submit the annual report on the cultivation of Cinchona in Bengal for the year ending 31st of March, 1870.

The three species of Cinchona of which the cultivation has been extended during the year, are *C. succirubra*, *C. officinalis*, and *C. calisaya*.

The number of plants of these species in permanent plantations were as under:

	C. succirubra.	*C. officinalis.*	*C. Calisaya*
March 31, 1869.	615,730	312,719	220
March 31, 1870.	1,055,100	406,899	4,000
Increase,	439,370	94,180	3,780

The increase of permanent plantation of *C. succirubra* and *C. calisaya* has been made about Rishap at an elevation of 2,500 feet; the increase of *C. officinalis* at Rungbee at an elevation of about 4,500 feet.

The average growth for the year of the ten measured plants of *C. succirubra* planted in March, 1867, at Rishap, has been 51 inches, which fairly represents the satisfactory general growth of the *C. succirubra* plantations.

The average growth for the year of the ten measured plants of *C. officinalis* planted in October, 1864, at Rungbee, has been 12 inches, which fairly represents the unsatisfactory general growth of the *C. officinalis* plantations.

The average growth for the year of the ten measured plants of *C. calisaya* planted in June, 1867, at Rishap, has been 52 inches, which represents the average growth of all the plants in the plantation catalogued as *C. calisaya*. But several important varieties are included under the name *C. calisaya*, and the tree variety raised by seed in February, 1867, and planted out in June, 1867, has attained a height of 12 feet in October, 1869, and a tree of this age, lately cut down, had produced two pounds of dry bark.

As fully explained by Dr. T. Anderson in his annual Cinchona report in Bengal for the year ending 31st March, 1868, the exceeding steepness of the hills, combined with the large rainfall, prevents any tilth on these Cinchona plantations. The grass and low jungle having been cut close, the young Cinchona plants are planted out in the permanent plantations. The weeds having been merely headed down, not eradicated, grow with great strength in a moist and warm climate, and continual scouring of the young plantations is necessary. This is the chief expense under this system of cultivation.

C. succirubra and *C. calisaya* (tree variety), grow so freely, that by the third year the young trees in the plantations are all locked; they then crush the jungle beneath them, and can take care of themselves, and little further expense upon them is called for.

But *C. officinalis* shows no inclination to become a tree at these plantations; it remains a shrub with very scanty foliage, and even on the plantations which are five years old, there continues the same expenditure in scouring.

C. succirubra and *C. calisaya* are planted about 1,200 to the acre; *C. officinalis* about 4,000 to the acre.

In the fifth year of growth in permanent plantation an acre of *C. officinalis* carries less than one-fourth the bark carried by an acre of *C. succirubra*, and costs more than four times as much annual expenditure. Moreover, the *C. officinalis* then appears disinclined to grow much larger, whereas *C. succirubra* will clearly grow into a considerable tree.

I calculate that at present it has not been discovered how to grow *C. officinalis* to economic profit at Rungbee. I therefore stopped its extension in September last, though I was aware of the high quality of the grey bark. The present quantity is large for an experiment; and, as an experiment, a few acres of *C. officinalis* were planted in September last at a somewhat higher level (5,000 feet) than the main plantation. Also, in all the *C. officinalis* plantations be-

low the level of 4,000 feet (above which level *C. succirubra* does not thrive), *C. succirubra* has been planted between the ranks of *C. officinalis*, and will, doubtless, soon overgrow it.

The propagation and extension of *C. calisaya* has been pushed as fast as possible. There is no difficulty in multiplying *C. succirubra* and *C. officinalis* by cuttings, but at Rishap there is found the greatest difficulty and uncertainty in multiplying *C. calisaya* by cuttings. Herr von Gorkom, the Director of the Dutch Government Cinchona cultivation in Java, informs me that there the same difficulty with *C. calisaya* is found; but, on the other hand, Mr. M'Ivor, in the drier climate of the Nilgherries, says cuttings strike with perfect success.

Herr von Gorkom has sent me on several occasions most valuable packets of *C. calisaya* seed, which germinated excellently; but if it could be discovered how to grow *C. calisaya* by cuttings, I should greatly prefer that method, as by it I am sure of getting exactly the variety which I wish to propagate. Mr. M'Ivor is of opinion, that not merely do the varieties cross freely, but that many hybrids are formed from different species of Cinchona.

The most valuable bark known in the European market is the *C. calisaya* bark; this species grows admirably at Rishap, and, during the past year, propagation has been almost entirely confined to it. In growing for profit, I believe it will ultimately be found advisable to grow one or two species only on these plantations; and that it is best to discard a species at once which is clearly inferior with us to *C. calisaya* and *C. succirubra*.

I have lately brought from the Nilgherries two new kinds of Cinchona, one provisionally named *C. mirabilis*, of Mr. Broughton, the other *C. pitayo*. In *C. mirabilis* the bark contains the astonishing quantity of 13½ per cent. of quinine alkaloid, and more than nine per cent. of crystallizable quinine. *C. pitayo* is a rich bark from Peru, a very high-level species, said to be found growing through the snow.

During the year both *C. succirubra* and *C. officinalis* ripened seeds; 5¾ ounces of the former, and 5¼ ounces of the latter were distributed. One ounce of seed will raise nearly 50,000 plants.

The *C. succirubra* trees stand six feet by six in the plantations, and, as an experiment in January last, a small portion of the denser plantation was thinned by cutting down three trees out of every four. This was found to produce 300 lbs. of dried bark.

At the same time a considerable portion of the more advanced trees were pruned by the removal of the lower branches. There was stored from the thinnings and prunings in all 2,400 lbs. of dried bark.

The only private plantation in Sikhim, which (so far as I know) is extending Cinchona planting on a considerable scale, is that of Mr. Lloyd and Colonel Angus, known as the Darjeeling Cinchona Association, and which occupies the north side of the Rungbee Valley. This Association has now about 500 acres of permanent plantation of *C. succirubra*, and has cut a considerable quantity of the three-year-old bark during the late cold weather, and sold it in the London market.

The Government Cinchona Plantations at Nunklow, in the Khasi Hills, was formed for the supply of Cinchona plants to the planters in Assam and Cachar. Seed is now easily transmitted, and I believe the discontinuance of the plantation at Nunklow has been decided upon by Government.

An English Rose Hedge.—A correspondent of the *Cottage Gardener* thus describes a rose-hedge he has seen: "On visiting the gardens of the Right Hon. Lord Middleton, of Applecross, about the first week in August, I was much astonished to find a hedge of the Gloire de Dijon Rose over 200 feet long, and nearly 5 feet in height, and in the finest possible health, and one sheet of flowers—and such flowers! I was told by Mr. Whitelaw, the intelligent gardener there, that the idea of such a hedge originated with Lady Middleton, and that the idea was no sooner entertained than it was carried out; hence the result. Lady Middleton has also had a hedge of Senateur Vaisse planted to the same extent as Gloire de Dijon, but more recently; consequently the plants have not the same fine appearance as the others. Those hedges are planted as screens to the kitchen garden, and nothing could be more appropriate; and, as Mr. Whitelaw remarked, there was no end of cutting Roses from them,

which is another matter worthy of consideration where quantities of flowers are required. I may mention that before those hedges were planted a neat wire fence was put up, with five strands, and after the plants were put in they were fastened to the wires. As they grew, the shoots were intertwined in and out until they reached the top. By this means they are quite compact, and independent of any other fastening to the wires."

NOTES ON THE CULTURE OF GREENHOUSE PLANTS.

BY CHARLES H. SHINN.

The following notes are the result of my experience, as to the best management of plants under glass, in a small greenhouse:

People have an idea that the proper growth of plants under glass is a very difficult thing, whereas it is very simple, and mainly depends upon one or two leading principles—in point of fact only *one*, which I will proceed to elucidate. Botanists classify plants according to generical differences; professional florists classify plants according to the degree of heat which insures their most perfect development. That is the reason why all large establishments have so many separate structures. They find out, by experiment, the degree of heat best adapted to each species in stock, and then put those which correspond in the same building. This is no useless division—the classes are plainly marked.

For instance, an average of 45 degrees is best for hardy annuals; ascend to 50 degrees, and plants like the Verbena flourish; rise to 60 degrees, and Petunias and Fuchsias do splendidly, but Verbenas spindle, and hardy annuals are worthless. So the scale ascends to stove plants, Orchids, etc. Now, by constant care, one may make a single greenhouse serve for several classes; but, as a general rule, most persons undertake too much. One plant *well grown* is worth many of varying constitutions. To all this it will be replied that in large greenhouses it occurs that we find all varying types together—Camellias and Verbenas on the same shelf, etc., etc.; but I answer, that all these plants are *grown* in *separate houses*, and when in bloom, are "put upon *exhibition*" for a few weeks, and then carried back to recuperate. The operation is simply a *cheat*, for persons unacquainted with the mysteries of the trade suppose that everything can be raised to perfection in *one house*, when in fact every gardener knows that such is *impossible*. Still, the range is quite extensive. Here is the rule for thorough enjoyment—Select some plant, and arrange your heat so as to give it *perfect development*. Then extend your list *down*, until the plants spindle, and *up* until they have plant-lice, and are stunted and miserable. Suppose we take Pelargoniums as the unit, and make them perfect (over 600 varieties); then Fuchsias, Primulas, Begonias, Bouvardias, Heliotropes, Lobelias, Pentstemons; these, and many more will be perfect, but Celeus, Caladium, Camellias, many Cacti, etc., will need a greater heat, yet still will do very well. I have said enough to give you an idea of my method of classification, which you can carry out much better than I. I will now give some hints as to management, gathered from my experience:

1. Plants should be quite near the glass; the moisture then condenses close to the leaves, and keeps them damp. Gardeners always keep an open tub of water on the floor under the

staging. I keep a panful in each of my frames. This keeps the air moist.

2. Our climate is so dry that old traditions must be thrown aside. Nail a five-inch cleat on the front edge of your plant table, and fill up with sawdust or tan-bark, in which sink your pots. The gain is immense—not half so much watering, and plants better for it.

3. I do not buy pots, but make boxes, and consider them superior and cheaper. Saw them out of ¼ inch redwood siding. Nail with small brads. The sides slant so that the bottom is smaller; say, 5 inches high, 3½ inches across the bottom, 4½ inches wide at top.

4. *Soil.*—Do not use broken pots, etc., for drainage. Charcoal, about ½ inch lumps, is much better—keeps the ground sweet. Gardeners use burnt earth, when they can get it, for potting, grass sods thrown in a pile with soapsuds on them, etc., etc. Plenty of sand.

PARTICULAR MANAGEMENT.

About April or May, every other row of glass should be whitewashed. In November, this should be partly rubbed off. Perhaps *all* the glass will need a thin coating. Ventilation is very important. One "forget" will be ruinous. I had last year a frame with over sixty seedling Cinerarias in thumb-pots. I propped the sash up every day in order to air them. One Sabbath I went to church, and forgot it. Thought of it during the last prayer, made faces all through the benediction, and rushed home; found the plants all cooked; did not save one! Keep plenty of water where it will evaporate. It is considered better to ventilate at the top. Fill all your corners out, and keep a succession. Primulas, Cinerarias, Mimulus, etc., will grow all summer long under your staging, in the shade, and when they are ready to bloom may be brought forward. Sow seeds of these three in May, for winter and spring blooming. Keep a *succession*, even if of nothing but Nasturtium. You will be able to start any amount of slips. I think the two best plans to be: 1st, take a saucer, fill half full of sand, and fill up with water, then put in little short pieces (1 inch to 2 inches), and set in the sun, keeping the water filled up (roots of Carnation and Rose will form in three weeks); then pot. 2d. Put one pot in another, a 3 inch in a 5 inch, 2 inches difference. Fill the space between with dirt, in which put your slips, and keep the inner pot with a little water in it. These may be old stories to many, and I may not have given much assistance; still I have at least shown my willingness, and any inquiries shall receive speedy answers, as far as I am able to give them.

REMARKS ON XYLOPHAGOUS MARINE ANIMALS, OR MARINE ANIMALS WHICH DESTROY WOOD.

BY R. E. C. STEARNS.

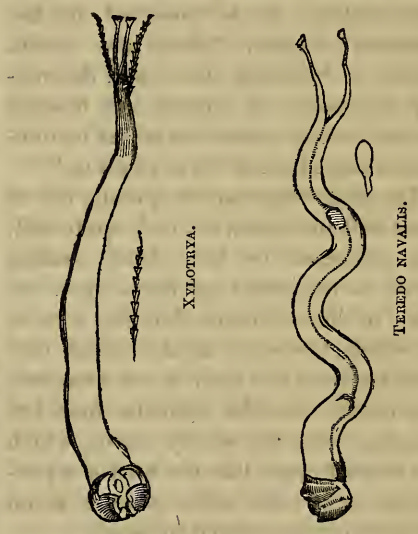
At a recent meeting of the California Academy of Sciences, Dr. Hewston submitted specimens of a species of crustacean recently detected in destroying the piling on the water-front of this city, and which it is quite likely is an introduced species, and belongs or is related to *Limnoria* or *Chelura*. A species of the first has for a long time been the source of much expense in various parts of Great Britain, by the damage it causes to the wharf and dock structures of that kingdom.

Mr. Arnold, Civil Engineer, of this city, also exhibited at the same meeting a portion of a pile destroyed by the crustacean referred to, as well as by the ship-worm; the ravages of both, and their method of operating upon the

wood, were well illustrated in the specimen submitted.

There are several species of xylophagous or wood-eating marine animals belonging to the Mollusca and Crustacea; included in the former are Teredines (*Teredininæ*) which form a subfamily of the Pholades (Family *Pholadidæ*), and which derive their name from the Greek word *Pholeo*—to bore. The Pholades proper are found in almost every sea, and live in the calcareous rocks and sandstones, as well as in clay and sand, in which they bore their burrows, and specimens are frequently found in some of the harder rock around the Cliff House, near this city. One genus, "*Xylophaga*, is found boring in floating wood, usually forming burrows across the grain about an inch deep, which are oval and lined with shell."*

Of the ship-worms (*Teredininæ*) over twenty are known, and while most of the species in the order in which they are placed, as above mentioned, burrow in harder materials, these confine their labors to wood, boring longitudinally or with the grain, and seldom if ever boring into the burrows of their neighbors. The *Teredines* are divided into three groups. First, *Teredo;* second, *Xylotrya;* third, *Uperotis*. The shell and tube in the sub-genus *Xylotrya* are the same as in the genus *Teredo;* but the shelly processes in *Xylotrya*, or siphonal palettes, as they are called, are long and penniform, or shaped like a quill or feather; to this group belong the three species of ship-worms found in California — *Xylotrya pennatifera*, *Xylotrya fimbriata*, *Xylotrya setacea*. The first and second of the species enumerated are said to be found in England as well as on our coast, while the third species is less widely distributed, and is reported from San Francisco Bay to San Pedro. As before stated, all of the species of ship-worm found thus far in California, belong to the genus *Xylotrya*, and may be distinguished by the two plume-like processes or palettes at the end of the siphons. The destruction caused by the *Xylotrya* (or wood-fish, as the generic word means), is too well known to require comment. I have known a perfectly sound pile of Oregon pine, of a diameter exceeding twelve inches, to be rendered utterly useless in eighteen



months by their ravages, while the wood elsewhere than within the section of the pile eaten and bored by them, was as sound and bright as on the day that the pile was driven; this instance is, however, extraordinary. The *Teredo navalis*, to which our ship-worm is frequently referred by local writers, is a foreign species, and the stylets are paddle-shaped, instead of penniform as in the California species.

The third group of the *Teredines* is the *Uperotis*. In these, the shelly valves and palettes are the same, but the tube is twisted and club-shaped from the an-

* Adams' Genera, Vol. II, p. 327.

imal burrowing in the husks of cocoa-nuts which are found floating in tropical seas.

The ship-worms are ovo-viviparous, the eggs being hatched in the body of the parent, and ejected therefrom through the upper siphonal tube. The young ship-worm, like the young oysters and others of the bivalve mollusks (*Conchifera*), swim freely for a time until they pre-empt or fix upon a pile or other submarine woodwork, when they commence burrowing. While doubtless a great deal of damage is done by them, nevertheless, as is observed by the brothers Adams, "they are useful agents in breaking down and destroying fragments of wrecks and floating timber, which otherwise might be dangerous impediments to navigation."

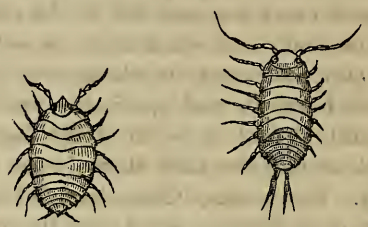
The ship-worms are frequently two to three feet in length, the body quite soft, but protected by the shelly coating which is deposited by them upon the sides of their burrow, forming a tube, to which, however, in the recent (not fossil) species the body is not attached; the boring is done with the foot, but whether with the shelly valves, which are shaped much like the nibs of a pod-augur, or by some other process, is not by any means a settled question.

In our species the shelly tube is so thin that it is impossible to split the wood without shattering it, but in one species, the *Teredo gigantea*, or giant ship-worm of Linnæus, the tube is often a yard long, and two inches in diameter,"* and exceedingly thick and strong.

The operations of the teredo suggested to that distinguished civil engineer, Mr. Brunel, his method of tunneling the Thames River.†

Having glanced at the xylophagous mollusks, we will now turn briefly to the wood-eating Crustacea, to which the species referred to by Dr. Hewston belongs.

The order of Isopod (or equal-footed) crustaceans inhabit the land and also fresh water and marine stations. As an illustration of their general form we may refer to the terrestrial wood-lice (*Oniscidæ*) which inhabit gardens, cellars, and other damp places, and which are called by the children, "sow-bugs."



Wood-louse. Swimming Rock-louse.

The *Isopoda* are divided into three sub-orders: First, the *Ambulatory*, or walkers; second, the *Natatory*, or swimmers; third, the *Sedentary*, or inactive Isopods.

Many of the species are parasites in their habits, and some live in the gills or on the tails of fishes; some live in the bronchial cavity of the land-crab; others in the same portion of the sea-crabs, shrimps, and prawns.

The *Limnoria terebrans*, which is the species so destructive to marine woodwork in Great Britain, belongs to the sea wood-lice, and is the only species in that genus. Whether the form exhibited by Dr. Hewston belongs to this genus or to the genus *Chelura* among the *Amphipoda*, another order of Crustacea, and which includes a species known as *Chelura terebrans*, remains to be determined. The last-named species was discovered some years ago at Trieste, boring into wood-work in sea-water.

A species of *Chelura* is also found in

* † Woodward's Manual of Mollusca, 2nd ed., p. 507.

Australia, and it is not improbable that the species recently found in this harbor may belong to one of the species I have named, and have been imported on the bottom of vessels from some of the ports with which we hold commercial relations.

With the ship-worms and sea-lice operating as in the specimen submitted by Mr. Arnold, a most careful inspection of all submerged wood-work connected with harbor improvements on the coast, is absolutely necessary, or great loss of property and perhaps bodily injury may ensue. So far as protecting piles by saturation with some chemical, obnoxious to the animals referred to in this paper, and which will measurably retain said quality for a reasonable length of time, and resist neutralization by the

LIMNORIA TEREBRANS.

WHITE (SOLDIER) ANT.

sea-water, experiments carefully and considerately made are certainly warranted, and any process by which a successful result should be obtained, would justify a very considerable expense, and still be good financial economy.

Before closing, I will mention another family of wood-eaters, the *Termites*, or white ants, which in some parts of the world are exceedingly destructive; they are principally confined to tropical countries. "When they attack wood-work, they form innumerable galleries, all of which lead to a central point, and in their work they seem carefully to avoid piercing the surface of the wood. Hence the articles which they have perforated appear perfectly sound, when the slightest touch is almost sufficient to cause them to fall to pieces."*

In connection with the depredations of the various forms of *Xylophaga*, it will be well to call attention to certain species of wood referred to in the paper on "Australian Forest Trees," read by me at a meeting of the Academy on the first of last July.† In said paper, I mentioned the *Eucalyptus marginata* (Smith), of which Dr. Mueller says: "The Jarrah or mahogany tree of S. W. Australia, famed for its indestructible wood, which is attacked neither by *Chelura* nor *Teredo* nor *Termites*, and therefore so much sought for jetties and other structures exposed to sea-water, also for underground work, and largely exported for railway sleepers. Vessels built of this timber have been enabled to do without copper-sheathing. It is very strong, of a close grain, and a slightly oily and resinous nature; it works well, takes a fine finish, and is by ship-builders here considered superior to either Oak, Teak, or indeed any other wood." * * * The *E. rostrata* (Schlecht)—the Red Gum of Victoria—is another very valuable species for the "extraordinary endurance of the wood underground, and for this reason highly valued for fence-posts, piles, and railway sleepers; for the latter it will last a dozen years, and if well selected much longer. It is also extensively used by ship-builders. * * * Next to the Jarrah from W. Australia, this is the best wood for resisting the attacks of sea-worms and white ants. This species reaches a hundred feet in height."

A consideration of the above facts

* Baird's Dict. Nat. Hist., p. 542.

† "On the Economic Value of certain Australian Forest Trees, and their cultivation in California." This valuable paper was printed in full in Vol. II of the CALIFORNIA HORTICULTURIST, pages 271, 313, 326, 355.—ED.

indicates the course to be pursued. The cultivation of the species of Eucalyptus named herein, would, if commenced immediately, supply us in ten or twelve years with an indestructible timber for submarine wood-work, and prove a profitable enterprise for the capital invested, as well as a great public benefit. But even if a much longer time were required to produce trees of either of these species (whose qualities are so particularly specified by Dr. Mueller) of dimensions suitable for submarine structures, nevertheless the importance of their cultivation is so palpable as to make further comment unnecessary.

WHAT THE LEAF DOES.

It pumps water from the ground through the thousands of tubes in the stem of the tree, and sends it into the atmosphere in the form of unseen mist, to be condensed and fall in showers; the very water that, but for the leaf, would sink in the earth and find its way, perchance, through subterranean channels to the sea. And thus it is that we see it works to give us the "early and the latter rain." It works to send the rills and streams, like lines of silver, down the mountain and across the plain. It works to pour down the larger brooks which turn the wheels that energize the machinery which gives employment to millions—commerce stimulated, wealth accumulated, and intelligence disseminated through the agency of this wealth. The leaf does it all.

It has been demonstrated that every square inch of leaf lifts 3-500 of an ounce every 24 hours. Now a large forest tree has about five acres of foliage, or 6,272,630 square inches. This being multiplied by 3-500 (the amount pumped by every inch) gives us the result—2,252 ounces, or 4,176 pints, or 294 quarts, or 8 barrels. The trees on one acre give 800 barrels in 24 hours. An acre of grass, or clover, or grain, would yield about the same result.

The leaf is a worker, too, in another field where we seldom look—where it works for the good of man in a wonderful manner. It carries immense quantities of electricity from the earth to the clouds and from the clouds to the earth. Rather dangerous business transporting lightning, but it is particularly fitted for this work. Did you ever see a leaf entire as to its edge? It is always pointed, and these points, whether they be large or small, are just fitted to handle this dangerous agent. These tiny fingers seize upon and carry it away with ease and wonderful dispatch. There must be no delay; it is "time freight." True, sometimes it gathers up more than the trunk can carry, and in the attempt to crowd and pack the baggage the trunk gets terribly shattered, and we say that lightning struck the tree. But it had been struck a thousand times before. This time it was overworked.—*American Entomologist.*

Banana Culture.—The cultivation of the Banana is engaging considerable attention in the neighborhood of Pilatka, Florida, and the river counties. It is stated that three years ago a gentleman in Orange County set out nine plants, and is now reaping the fruits of a three-acre field, and realizes $125 per month from the fruit and the young plants that are continually suckering around the roots of the old plants. The Banana fruits in all seasons of the year round, and is enriched by the shedding of its huge leaves. With a little shelter of trees to break frost and winds, the Banana might become a profitable plant in California.—*California Agriculturist.*

NURSERY AND RESIDENCE OF W. F. KELSEY, OAKLAND, CAL.

BY MRS. E. S. CARR.

In connection with the Rural Homes, it is proposed to give from time to time, in the pages of the HORTICULTURIST, descriptions of our nurseries and fruit farms; for there is probably no class of citizens to whom California is more indebted for her prosperity, than those pioneer nurserymen, whose labors early demonstrated the unrivaled advantages of her soil and climate.

"For he who blesses most is blessed,
And God and man shall own his worth
Who toils to leave as his bequest
An added beauty to the earth."

And surely such fruit missionaries as Smith, of Sacramento; Mr. Seth Lewelling, and others whom we might name, deserve an honored place among the founders of the State.

From the first attempts made in fruit culture, at Sacramento, up to the present time, there has been steady, almost uninterrupted progress, until the superiority of our products is now everywhere confessed. The adaptation of special localities to special cultures is more marked here than elsewhere, and yet there is scarcely a locality where the more important kinds can not be grown with profit. Our *seedling fruits* are now attracting attention; some of them are declared by experts to be among the best known.

At the same time, forest planting has begun to assume something like the importance that it deserves, making the growth of nursery stock destined to supply this demand even more profitable than that of fruit. There has also been a rapid increase in the demand for ornamental plants of every kind.

Twelve years ago, when Mr. Kelsey bought his small homestead in Oakland, all this was not quite so certain. The soil, though rich, was heavy and unmanageable, the water supplies uncertain, and the inevitable war with squirrels and gophers to be maintained long after other difficulties were overcome. But he planted his twenty-eight acres with an orchard and nursery, in full faith that the City of Oaks would attract a population of taste and culture, whose wants he would anticipate. The city has surrounded him; little by little the public have invaded his domains, compelling him to add room to room and cottage to cottage, until it becomes a question whether Mr. Kelsey and his gardens, or families *with* children, shall hold possession.

In view, perhaps, of ultimate surrender, other and more extensive nurseries have been planted on the road to Berkeley, which are yearly becoming more profitable, as new and desirable trees and plants are added to the list.

The home place, which is illustrated by the accompanying Photograph, is beautifully situated upon what is to be the *Bois de Boulogne* of Oakland—Telegraph Road. It commands a wide prospect, fronting the hills, and the villas which already adorn every accessible site; and looking out in the opposite direction upon the city of San Francisco and the Golden Gate. Pleasant homes surround it in every direction; the Military Academy and Theological Seminary are in the near neighborhood, as are also the extensive floral establishments of Messrs. Nolan, Hutchison, and others.

But little of the ground at "Kelsey's" is devoted to ornament. Upon the lawn are some fine specimen trees, especially of the Redwood and Madroño, some choice standard Roses, and along Telegraph Avenue a good hedge of Privet and California Cherry. But the nursery itself contains such a variety of orna-

mental shrubs, and such a quantity of flowering plants, as to render the place interesting at all seasons. During all the last month the Tulips and Hyacinths have been the special attraction; a bed of the latter, containing many thousand bulbs, enabled the visitor to realize somewhat the glory of bulb-shows in Holland, or what Mr. Allen's "Flower farm" on Long Island must be, when his eighteen acres of Gladioli and ten acres of Lilies are in bloom. There are extensive plantations of Roses, Clove Pinks, Carnations, and bedding plants of all kinds. The greenhouses contain an immense quantity of young stock of variegated plants. Mr. J. G. Nicholson, who has charge of the propagating department, is an expert in the business, as one may see who is favored with a peep into the closet which serves as a "stove" for a few choice tropical growths.

A large part of the Home Nursery is taken up in the culture of evergreens. Many of these are imported from the East, one or two years old from the seed, and by frequent transplanting made into fine specimens for lawns, etc. Our Californian Coniferæ are represented by thousands; and a great number of the rarer kinds, such as *Abies Williamsonii* and *Torreya Californica*, will soon be ready for market. The business of propagating Australian and New Holland species, *Eucalyptus*, *Acacia*, *Pittosporums*, etc., is extensively prosecuted.

At the Berkeley Nurseries, one of which contains twenty-five and the other seventeen acres, there is an immense stock of fruit-trees of every variety; of the Mulberry, six or seven varieties, and all the *nut-trees* to be desired on this coast. To know what kinds of deciduous and other ornamental trees succeed in this climate, and to understand the rapidity of growth here, one should spend a day with Mr. John Kelsey in the nurseries especially under his care. There are several very fine specimen trees near his cottage.

I have noticed at all the large nurseries which I have visited the almost exclusive employment of Chinese laborers. "We are driven to it," Mr. Kelsey says; "no other class of laborers are *careful* enough, and reliable enough. Men trained to slow and thorough work, such as dibbling-in rice by hand, must necessarily have more patience in potting, transplanting, and other operations of the nursery. The Chinese like gardening better than any other outdoor employment, which can not be said of Americans or Irish."

Mr. Kelsey is constantly receiving new plants, and intends to increase his list of trees suitable for street and forest planting to the largest practicable extent. The readers of the HORTICULTURIST will be amply repaid for a visit to these nurseries, at almost any season, but especially when Roses and Cherries are in their prime.

NEW PLANT.—Botanists are engaged in planting all over Europe a new plant imported from New Granada, which, if grown successfully, will be a formidable rival to our manufactured ink. It is known as the *Coriaria Shymifolia*, or ink plant. The juice which escapes from it has been given the name of "Changi," and is a little red in color, but in the space of a few hours after exposure to the air turns to an intense black. This ink does not corrode steel pens like the ink in ordinary use, resists chemical substances, and preserves its intensity for many years.

PORTLAND has a bearing fig-tree.

FLOWER-TALK.—HONEYSUCKLES.

BY NORA BECK.

Around my porch in tangled twine,
  Where brown bees hover,
A quaint old honeysuckle-vine
  Steals drooping over;
Its clustered sweets are hanging low,
And on its breath blown to and fro
This song comes floating, sad and slow,
  Adown the clover:

"Lovers have stood within my shade,
  Watched and waited;
Kisses and prayers and vows been made,
  And blithe young hearts been mated;
My branches are hung with bird-homes gray,
Whence the wren and her nestlings flew away
In the heart of the early summer-day,
  When by storms berated.

"The lazy south wind floating by
  Hath never missed me;
And sweet June roses, hanging high,
  Forever tryst me.
We mingled branch and bloom together,
Through all the golden summer weather,
Till blossoms fled, and white snow-feather,
  Slow falling, kissed me.

"The snow-flakes came, with bitter wind,
  The roses slaying.
Then honeyed core grew withered rind,
  All winds obeying;
And ragged leaves, swift fluttering down,
Left my poor branches bare and brown,
Till snow-wreaths wove their latest crown,
  With mute essaying.

"My rose-friend nigh, alike bereft
  Of sweetness clinging,
Had yet her long-hid weapons left
  For cruel stinging;
She pierced my young limbs through and through,
And closer clung when wild winds blew,
As one might say, '*not* false, but *true*,'
  The while pain bringing."

"The spring will come with sweetness rife,
  An eager lover;
Will sheathe the thorns that take my life,
  In glossy cover.
But I—I shall not bloom in June;
For me no birds exulting tune,
No sweet last kiss of harvest moon—
  My life is over.

I crumble like my last year's leaves;
  My branches wither,
And part, like last year's unbound sheaves,
  Wind-wafted hither.
The winter's breath was all too chill;
The cruel thorns are clinging still;
I droop in loveless age, until
  I drift—ah, whither?"

HOW TO MAKE A GARDEN.

BY F. A. MILLER.

[Continued from page 114, April number.]

Having given some few hints for the preparation of soil for gardens, in the April number of the HORTICULTURIST, I will now endeavor to advise on other work which should be done before plants are set out. It is imperatively necessary to see that the arrangements for watering are all perfected, and that there shall be no unnecessary travel over the ground; the carpenter, the mason, the plumber, and the painter, should all have their work completed before operations in the garden commence. The next work, after preparing the soil thoroughly, should be the laying out of the necessary walks and beds, which should be done in accordance with convenience and good taste. In small city gardens not much choice is left, and inasmuch as my remarks are intended only to instruct "*how to make plants grow*," I will leave the arrangements for walks to the gardener employed, but will advise against raising the beds higher than the walks, which is all very well in a country where it rains more or less throughout the summer, and where drainage is necessary, but is injurious to plants in California, where it is very difficult, laborious, and expensive to keep the ground moist. Let the walks be a little higher in the centre, and have your beds about the same height as the centre of the walks.

Before planting, have suitable stakes

on hand for all shrubs and trees. The strong winds which prevail here throughout the year, make stakes indispensable.

In selecting plants, it is altogether wrong to select large-sized ones, although I am not in favor of planting very small weak plants, and small plants are particularly objectionable when taken from the greenhouse just before planting. This proposition, however, calls for a thorough explanation, as I have met many persons who absolutely object to purchasing plants which have been raised and cultivated under glass. There is no doubt that plants which have been exposed to the open air for some time, will make a much better growth during the first six or eight months, than if they are taken immediately from the greenhouse; but in nine cases out of ten, persons who call at a nursery for the purpose of purchasing plants, are only too anxious to select those plants which are in full bloom and are crowded with luxuriant foliage. As for the appearance, a plant setting in the open air compares very unfavorably with a similar plant growing under glass, and the latter is almost invariably selected. But the hardiness of a plant depends a great deal on the temperature to which a greenhouse is subjected. If greenhouses are well ventilated and aired, plants may be removed from thence into the open air without injury, if they are not too much exposed to the heavy winds. In all cases, I would suggest selecting plants from the open air if they can be had; but many varieties must be cultivated under glass so long as they remain in pots, and until they find a market. Such plants may be selected a week or two before they are intended to be planted out in the most exposed positions, and they should be placed in some sheltered situation in the open air, so that they may gradually become accustomed to the change. Deciduous shrubs are best taken up during winter, and may be transplanted without any detriment; on the contrary, they delight in new soil, and will flower during the ensuing summer season.

When you are ready to take your plants out of the pots, see that they are thoroughly watered before they are transplanted. This is one of the most important points in transplanting plants or trees from pots or boxes into the open ground. Frequently the loss of plants must be attributed to the fact that the ball of earth around their roots was in a dry condition when shifted. It is particularly necessary that this suggestion should be adopted if plants are set out late in spring or during summer. When at the time of planting the ball is in a dry condition, it is apt to remain so in spite of watering after the planting; the surrounding soil will absorb the water without affecting the dry ball of earth enveloping the roots of the plants, which can not live on its own resources, and must perish. Therefore be sure that the earth in the pot is in a moist condition when the plant is removed.

If the plant is pot-bound, or in other words, if the ball of earth is covered with roots, it is well to loosen carefully the outside roots, which will enable them to strike into the new soil at once, and take hold. There are, however, a few plants, such as the Eucalyptus, some of the Acacias, and other New Holland trees and shrubs, which should be planted without any disturbance of the roots.

All plants should be planted from one-half to one inch deeper than in their former condition, and if they are old or large plants it will be beneficial to plant them from two to three inches

deeper. After planting and before the ground around them is leveled off, a good supply of water should be given, so as to settle the ground well around the roots, and to prevent the old ball of earth from drying up. The stakes should be then set, but not too close to the stem of the plant, as this will frequently result in the breaking of the ball and in damaging the roots, which many plants can not endure. Remove all decayed or damaged leaves, and tie up the plant properly, which should be done rather loosely, so as to allow the stem and branches to expand as they develop themselves. If the strings are drawn up too tight, they are apt to cut the bark and the soft wood, which frequently results in the disfiguring of the plant, and even in the breaking-off of the stem at that point. During the following day, the surface around the plants should be leveled, and the planting may be considered finished.

THE TAMARIND TREE.—Though the fruit is generally considered tropical, the tree can undoubtedly be grown to perfection in California, as it is successfully raised in some of the Southern States. As far north as Virginia, they have attained a height of twenty-five feet, with a trunk of eighteen inches in circumference at the ground, in eight years from the seeds. They are ranked among the truly desirable ornamental trees for the lawn or roadside, being beautifully symmetrical in growth, with a trunk attaining to a lofty height, and crowned with wide-spreading branches of delicate foliage, and should be introduced among us. From the fruit, which is borne abundantly, is made a cooling and refreshing beverage, and a delicious conserve. The tree can be grown from the seeds procured from the pods, previously to being conserved.

Editorial Portfolio.

HORTICULTURAL SPRING EXHIBITION.

For the first time, San Francisco will this year witness a Horticultural Spring Exhibition. In Europe and in the East floral fairs take place every month during spring, summer, and autumn, and those of the spring season are generally the most attractive. The different classes of plants have their seasons; while some produce their flowers in autumn, others will be in the height of their glory in early spring, and others again bloom in midsummer. In order to bring all desirable plants before the notice of the public, floral shows should be held more than once a year; and the Bay District Horticultural Society has therefore resolved to hold two exhibitions annually—one in the spring, and the other in the autumn as heretofore. While it is requisite that at the autumn exhibition the display of the various kinds of fruits and other horticultural and agricultural products should form a very important feature, the spring exhibition must rely chiefly upon flowers, trees, and shrubs, and must therefore be considered more particularly a floral show. In this particular, it may reasonably be expected that the exhibition will be far more attractive and varied. Although we have to dispense with Dahlias and the Gladioli at this time, yet we have Primulas, Auriculas, and Roses, with Cinerarias, Tulips, and other early flowering bulbs, to fill the vacancy, we trust, to the satisfaction of all concerned.

It is true that this is a very busy time with florists and nurserymen, and their attendance compels them to much sacrifice; yet this little inconvenience should not be allowed to interfere with a public demonstration of this kind.

With us, public enterprises suffer to a great extent from the prevalence of selfish motives, and we hope our nurserymen and florists will not be so narrow-minded as to fail in active co-operation, but will with united effort make this exhibition a complete success. The public will undoubtedly appreciate these efforts, and this accomplished, the professional gardeners and florists will have gained much.

The excuses for not participating in these exhibitions are of trifling weight, and we consider it the duty of all professional men to sacrifice some little time and expense for the sake of this public enterprise. If all combine and work harmoniously, our Horticultural Exhibitions will rank among the best and most complete.

In regard to the coming Spring Exhibition, we understand that no effort will be spared to make it a success; and that this will be accomplished we have no doubt. We know that the men who are taking hold, will see it through.

We have heard suggestions made in regard to the suitable decoration of the Hall, and we hope that these suggestions will be carried into effect. Artistic and tasteful decorations will add considerably to the general appearance of the Hall.

The premiums offered are sufficient to afford strong inducements to exhibitors.

The plan of distributing small plants to children, which was inaugurated last year, is to be continued this year; and in order to ascertain how far these have been taken care of, the Society offers some fifty desirable and suitable prizes, to be presented to those children who have best taken care of them. This feature can not fail to be generally attractive, and if continued in the right spirit, will undoubtedly awaken that taste for flowers, plants, and shrubs, among the rising generation, which is so rarely found among us.

It is very surprising that so few of our amateur and lady gardeners avail themselves of the opportunity to contribute their share to these exhibitions. As they admire flowers and trees, they certainly must feel an interest in their exhibition; and if a few of them will but set an example and furnish their best specimens, they will not only afford material aid to the Society, but will also encourage others to do the same. There are some good prizes offered to amateurs, and we hope to see a lively competition.

As for the arrangement of plants in the Hall, we would suggest that the tables be less crowded with specimens than has been the plan on previous occasions. We would much prefer to see a more limited number of plants, provided they were the very best which could be produced. A well-grown plant, if crowded by others possibly much inferior, can not be displayed to advantage. We would, therefore, kindly suggest to our floral establishments the exhibiting of fewer plants, but let them all be good specimens, and the effect will be as satisfactory as can be desired.

We want to see the Exhibition a decided success, also, financially. The Horticultural Society has for a number of years struggled for its existence, and a liberal support is justly its due; and if the working members are encouraged by a just appreciation of their labors, we may expect some good service to the community from them in the future.

A hall tastefully filled with the best and choicest specimens of flowers, trees, and shrubs, refreshing and invigorating with their delicious perfume, and the

opportunity of listening to choice selections of sweet and popular music exquisitely performed, ought to be sufficient inducement for every one to visit the Exhibition. We do not know where else a more pleasant hour may be passed. Let us all be there.

THE CULTIVATION OF CHOICE GRAPES UNDER GLASS.

We have been requested to reply to the following queries on this subject, and our experience in this department of Horticulture being very limited, we appeal to our numerous professional readers for the required information:

1st. Which are the best vines for cultivation under glass in this country? For a space for twenty-four vines, which would you recommend, and in what proportion?

2d. How near together should they be planted?

3d. Where can the best vines be obtained at the present time?

4th. What aged vines would you recommend?

5th. Is it safe to plant now, or is it too late?

6th. The vine-house stands north and south; which vines would you plant on the east side, and which on the west?

7th. The outside borders are well made and drained. No Indian-mound stuff in them—do you use it?

Lilium Washingtonianum (Kellogg), or Lady Washington Lily.—In our last number we copied, from an exchange, notice of large consignments of this Lily being sold at high prices in Europe; but in ascribing the naming and description to Prof. A. Wood, we unintentionally indorsed an error. This Lily was exhibited in 1854 by Dr. A. Kellogg, our eminent botanist, before the California Academy of Natural Sciences, as new but too fragmentary for description. It was cultivated by Mr. H. G. Bloomer, flowered, figured, and described before the Academy, 18th of July, 1859. (See Proceedings of that year, page 13th.) Lithographed, colored, and illustrated for the *Hesperian*, in October of 1859. (See pages 340–41.) It was redescribed by A. Wood, June, 1868, in Proc. Acad. of Nat. Sciences, Philadelphia.

Durability of Wood.—We expect wooden buildings to decay, and if they endure for a century or two they are regarded as venerable specimens of antiquity. The First Baptist meeting-house in Providence, R. I., a fine architectural model, is said to be as sound, even to the top of its lofty spire, as when first built, though nearly a century old. But this is a young infant compared with some European churches. The trusses of the old part of the roof of the Basilica of St. Peter's at Rome, were framed in 816, but when carefully examined in 1814, were found to be perfectly sound and good. They were made of Fir, and have lasted over a thousand years. The domes of the Church of St. Mark, at Venice, were built nearly eight hundred and fifty years ago, and the outside timbers are yet good. Brick and stone could hardly last better than such wood-work.

Timber cased in plaster and in iron, however, has developed a very dangerous kind of dry rot.

Azaleas and Rhododendrons.—S. B. Parsons, competent authority, names the following as the three best Azaleas: Aurantiaca, *Beaute de Flandres* and *Honneur de la Belgique*. The three best Rhododendrons: *Boseum elegans*, and Lee (dark purple).—*Country Gentleman.*

WOODWARD'S GARDENS.

The gardens are now in fine order; the trees and shrubs, both deciduous and evergreen, are putting out their new growth, and, yet untainted by summer dust, are rich in their varied verdure. The Roses and many other shrubs are in full flower, and, with the rich carpeting of luxuriant grass, present a very bright and gay appearance. The well-stocked conservatories are particularly attractive; everything looks healthy and thriving. The Camellias and Azaleas are in fine bloom, as also the numerous and varied collection of flowering Begonias, whose delicately tinted flowers pleasingly contrast with the more decided hues of the bright-eyed Calceolarias. Geraniums and Pelargoniums, and many other plants, are in fine flower. The magnificent tropical plants are unusually rich in their splendid verdure, while the *Gardenias* (Cape Jasmines), *Begonia odorata*, *Crinum Asiaticum*, and the glorious *Stephanotis floribunda* (our special favorite) make the air redolent of rich perfume. No wonder that these gardens, notwithstanding the inconveniences attendant on the horse distemper, were densely crowded on Sunday last, exemplifying an increasing refinement of taste in our fellow-citizens.

REPORTS OF SOCIETIES.

Bay District Horticultural Society. Regular meeting, Saturday, April 26th, 1873.

Mr. J. H. Applegate, Jr., was elected a regular member of the Society.

Mr. Michelsen read his Essay on Camellia Culture in this State, which will be published in full in the next number of the Horticulturist.

Sundry queries were laid before the Society relating to the best varieties of Grape-vines for cultivation under glass; where to obtain them; how to manage them, etc., etc. Mr. Schumann was appointed a committee of one to prepare answers to these questions, and to read them before the next regular meeting of the Society, when the subject will be generally discussed.

FAIRS AND EXHIBITIONS.

Horticultural Spring Exhibition.—The opening of the Spring Exhibition has been unavoidably postponed on account of the inconveniences caused by the horse disease now prevalent in this city and throughout the State. The opening will take place on May 8th.

We are pleased to learn that the additional time gained for preparation will render the Exhibition more complete and successful. We understand, from reliable sources, that the Society meets everywhere with good support, and that its success financially is no longer a matter of doubt.

NOTICES OF BOOKS.

Thanks to the enterprising publishers, the May number of our always acceptable *Overland* is at hand. It contains much excellent reading matter. "The Gold Sands of the Pacific," "Borneo Cinnabar Mines," "Arab Stories and Traditions down the Nile," etc., are well worth reading. Altogether a first-rate number.

FAVORS RECEIVED.

We have received a copy of Purdy's *Small Fruit Instructor*. It contains much information on this subject, and has evidently been written with considerable care; we can safely recommend it to those of our friends who need this specialty.

Our thanks are due to the Massachusetts Horticultural Society for a copy of their Transactions for 1872.

The April number of the *Flower Gardener* is at hand. This is a quarterly magazine, published by Beach & Co., Brooklyn, N. Y. This number contains much valuable and highly interesting information, as well as a copious catalogue of their plants. Terms $1 per annum.

Our thanks are due to the Commissioner of Agriculture for the Monthly Report for March, 1873. The statistics are highly interesting, and the information valuable.

CATALOGUES RECEIVED.

Briggs & Brothers' *Quarterly Floral*, for April, is at hand. Many useful notes and some notices of new varieties.

NEW AND RARE PLANTS.

New Japan Coxcomb — *Celosia Japonica.* This is as handsome in color as the old kind, but divides itself up into a large number of small bunches, thus allowing of cutting without sacrificing the whole plant.

Double-flowered Zonale Geraniums.—M. Jean Sisley, an amateur of Lyons, France, has succeeded in raising several varieties which sell at a high price in Europe.

Immense Rose Show.—At a recent Rose show in Sydenham, England, there was on exhibition a continuous line of boxes, twelve miles long, each containing forty Roses.—*Horticulturist.*

The Pine is a native of America.

WORK FOR MAY.

BY F. A. MILLER.

Our spring has been unusually dry, and therefore late planting can not be persevered in with much prospect of success, unless artificial irrigation can be adopted.

The fruit-trees have been slightly injured by frost, but there is yet a good average crop in prospect.

Very little can be done in the orchards and vineyards at this time. Another plowing of the orchard will help materially to destroy weeds and insects, and to keep the soil in a porous condition.

I have been informed that in some locations mildew has made its appearance upon the Grape-vines, and that it seems to be the same in character as the mildew which is now affecting our Rose-bushes in the gardens; this is doubtless caused by the sudden change of temperature in our climate from hot days to cold nights.

The readers of the Horticulturist will have observed in the records of the April meeting of the Horticultural Society, mention of several remedies for mildew. I have experimented with the various remedies proposed, and find that Dr. Kellogg's prescription is very effective. It seems that one part of *sulphurous* acid, diluted with forty parts of water, has removed the mildew upon the Roses, and has not damaged either flowers or foliage. This is a cheap and convenient remedy, and may be applied either with a garden-syringe or with the watering-pot. One or two applications are sufficient. Sulphurous acid may be obtained in any of our drug-stores, and one-fourth of a gallon will last for some time. This remedy should be very extensively used.

Black sulphur is also both very effect-

ive and cheap, and is easily applied. Purchase, say, two to four pounds of black sulphur at some wholesale drug-store, dissolve it in water, and add some common yellow soap rubbed into the water, in order to have the sulphur adhere better to the foliage. Sprinkle the affected foliage and stems with this solution two or three times, and the mildew will disappear.

I have tried both of these remedies, and I find that they are sure and cheap cures.

In the kitchen garden, I must recommend frequent hoeing and the keeping of the ground clear from weeds. Now is the time to sow late Peas, and also a small quantity of Head Lettuce, and Black Radishes, which are very desirable vegetables for the table at all times. Some Beans and Corn may yet be sown, where the soil is not too dry. Tomato plants which have been retained in the frame up to this time, must be planted in the open air at once, if any Tomatoes are expected early in the season.

The flower garden is now in its glory. Roses, Geraniums, Pelargoniums, Heliotropes, Pinks, Pansies, Fuchsias, Verbenas, Petunias, Stocks, and many other flowering plants, are displaying their masses of blooms, and are filling the air with their exquisite perfume. We must not neglect to remove all flowers as soon as they begin to wither; nothing looks so shabby, or acts so detrimentally, by absorbing the vitality of plants, as old and half-decayed flowers. The plants need all their strength and resources to develop the remaining buds, and to form their new growth.

Tulips, Hyacinths, and Narcissus are now things of the past. Their foliage will soon wither and decay, and it is most important that their place should be filled with some summer-flowering plants. Mignonette is an excellent substitute, and many annuals which I have mentioned at various times will assist for the same purpose; some of them, such as the Asters, Balsams, etc., may be safely transplanted to such beds, if they have been reared in pots or boxes, or in some other protected place. While your garden is productive of a profusion of flowers at the present time, do not neglect to provide for the future. You can have your beds covered with flowers all the year round if you will exert yourself in proper time.

All summer-flowering bulbs must be planted out now. Don't forget to plant also a few Dahlias, Gladioli, Amaryllis, Tuberoses, Tigridias, and Lilies. If you are desirous of having them in your collection, you must plant them now.

Greenhouse and conservatory plants are pushing out rapidly; water may now be given more plentifully. Give air from morning until two or three o'clock in the afternoon. The sun acts powerfully through the glass, and to prevent the foliage from being scorched, whitewash the glass with a thin coat. Insects make their appearance everywhere; fumigate once a week by burning up some tobacco-stems; keep the room shut while you are doing this. Do not water the foliage before fumigating, as the smoke will affect it when in a tender and wet condition. Search your Camellias, Cape Jasmines, and other greenhouse shrubs, and remove any spiders or scales which you may find on the under-side of the leaves or along the stems. During very warm days, it will be beneficial to most of your plants if you give them a syringing.

If any of the tender seedlings make their appearance, shade them well during bright days; this will protect the young plants, and also obviate the necessity of watering so frequently. Transplant the

young seedlings as soon as they have formed three or four leaves, water immediately after transplanting, and shade well for a few days. This is best done by suspending a newspaper over the plants, which you may rest upon a few sticks placed here and there.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

We have, in previous reports, said so much regarding fruits, as being not only a delightful, but, for our health, a necessary portion of our daily diet, that we need not add anything more at the present time on the subject, now pretty well exhausted. We will merely remark that vegetable substances are more suitable to the inhabitants of warm countries, who only require in very moderate quantities meats and other fatty diet to generate heat, which is supplied in the atmosphere in abundance. We, in California, do not need fruits to the extent that is necessary in the entirely tropical regions, our climate being a medium between cold countries and those of excessive heat; yet we need the use of fruits to a very considerable extent to preserve our systems in a normally healthy condition.

We do not envy any part of the world that can not produce Strawberries, Peaches, Pears, Apples, Plums, Grapes, etc. The Banana, the Orange, the Pineapple, Date, Mango, and the other numerous and luscious, though cloying, tropical fruits, are well enough in their way, as a change from other things; they may be regarded as luxuries, of which most people tire when they are too continuously indulged in. But, to say nothing of our other delicious and piquant fruits, no one ever wearies of good, first-class Apples. One can eat them day after day, and still feel that he is as good a judge of what is first-rate as he ever was. They are found very useful in preventing dyspepsia and liver complaint. Even the people of the tropics seem of our way of thinking. Though they have, as we are very apt to think, the very paradise of fruits with them, they envy us, at any rate, our Apples, and import them in immense quantities. Thousands of barrels of Baldwins, Newtown Pippins, and other favorites, are annually shipped to tropical ports.

By the way, there is one fruit—the English Gooseberry—which is raised in such perfection in Europe, especially in England, that we should very much like to see it a success in California. We all know that it is almost a complete failure in the Eastern and Middle States, etc., on account of its destruction by the mildew. We, however, think there is a better chance for it in this State than in any other location that we know of on this continent. And we are encouraged in this belief by having met with a cultivator of fruits in Napa Valley who has made the raising of the English Gooseberry a specialty with him. He informed us that, last year, he had succeeded in producing from a few bushes some of the finest berries, equal to any he had ever seen in England. His plan was to run a rather deep furrow or drain between the rows, and thus keep them well drained in the wet season, and to plant his bushes on somewhat elevated ridges. Above all, he heavily manured them with ashes, lime, and well-decomposed horse-dung—as much as one barrowful and a half to each bush. He also informed us that his bushes at the present time, by this course, present a most promising appearance, being entirely free from any mildew, and loaded with healthy fruit.

This fruit-raiser stated that his cultivated Blackberries present a most wonderful sight, every year, when in fruit, being perfectly loaded down, and bearing on an average twenty pounds to the stock.

The late frosts have materially damaged the fruit-crop generally, particularly the Grapes, Apricots, Nectarines, and Peaches; but it is expected that the markets will be pretty well supplied in due season, although the yield, in certain kinds which we have named above, may be less than in previous years. Our markets are usually overstocked in the height of each fruit's season, and it has been a frequent occurrence for large quantities to be thrown into the bay, for want of purchasers. Hence it is fair to presume that growers will net more for their consignments, without creating any very material advance in the price to consumers.

Oranges are in good supply, the native product having the preference over foreign varieties. The recent cool weather kept back the Strawberries, and for some days they came into the market little more than half ripe, making them rather hard and comparatively unwholesome; being picked also too soon, except for the collection of the dimes. But they are daily improving, though slowly, in quality as well as in quantity, ruddier in hue, more tender, and therefore finer in flavor. The weather is still (21st of April) not quite favorable for their growth. The range of prices for them is still rather wide.

The Panama steamers have brought liberal shipments of Limes, and moderate consignments of Bananas, Pineapples, and Mangoes. Pears are scarce, of course, being now at the fag-end of the winter season; but the supply of Apples from Oregon and the higher lands in California has been larger during a few days, though prices are steady. Apples, by the box, retail at $2@$3. We quote Bananas, 50@75c.; Mangoes, $1.50 per dozen; Eastern Chestnuts, 25c., Italian do, 50c., Smyrna Figs, 35@40c., per pound.

Dried fruits are at about the same rates as last month.

All spring vegetables are abundant, and most of them are much cheaper, of course, as the season advances. The Panama steamer brought a lot of Mexican Tomatoes, which are selling at 25c. per pound.

First appearance of Summer Squashes on the 21st of April—30c. per pound.

Medical Value of Asparagus.—A medical correspondent of an English journal says that the advantages of Asparagus are not sufficiently estimated by those who suffer with rheumatism and gout. Slight cases of rheumatism are cured in a few days by feeding on this delicious esculent, and more chronic cases are much relieved, especially if the patient avoids all acids, whether in food or beverage. The Jerusalem Artichoke has also a similar effect in relieving rheumatism. The heads may be eaten in the usual way; but tea made from the leaves of the stalk, and drank three or four times a day, is a certain remedy, though not equally agreeable.

Clearing Moss from Fruit Trees.—The *American Agriculturist* says, nothing is better than carbolic soap and lye. Make common lye of wood ashes, not strong, and add half a pound of carbolic soap to a three-gallon pail of boiling lye. Apply hot with a swab to old trees. It has been used with entire success upon Apple, Pear, Peach and Cherry trees, destroying every particle of moss it touches.

Editorial Gleanings.

TO MANAGE CUTTINGS.

In selecting a cutting, a great deal depends upon a judicious choice; if the slip is too young and full of fresh sap, it will fade away from too much evaporation, and if it is too old—*i. e.*, hard and woody—it will take a great while to strike root. You must take a cutting that is partly ripened, and is from a vigorous shoot, yet is a little hardened at the base.

It is also essential to have a bud or joint at or near the end of the cutting, as all roots strike from it, and the nearer it is to the base, the greater your chance of success.

Plant your cuttings in common red pots, filled half full of rich loam, and two inches of sand on the top (scouring sand will do, but not sea-sand), wet this thoroughly, and put the cuttings close around the edge of the pot; for if the bud joint comes in contact with the surface of the pot, it seems to strike root more quickly. Pull off the lower leaves before you plant the cutting. Press the wet sand tightly about the tiny stem, for a great deal of your success in raising the cuttings depends upon the close contact of the sand with the stem. When cuttings are firmly planted, cover them with a glass shade if possible, for it will greatly promote the growth of the plants.

Moisture, light, and heat are the three essentials to plant-life; without them no cutting will start.

Shade for two or three days from sunlight, but do not let the sand become dry; then give all the sun you can obtain; keep up a good supply of moisture, and you can hardly fail to root most of your cuttings.

Cuttings of Roses, Verbenas, Oleanders, Heliotropes, etc., etc., can also be rooted in small vials filled with warmish water, and suspended from the window casement. Select the cuttings as described above; pull off the lowest leaves, and insert the end for about an inch into the vial. Tie a string about its neck, and hang in the sun. If a bit of cotton wool is wrapped about the cutting where it goes into the neck of the vial, and it is kept wet, it prevents the rapid evaporation of the water.

When the tiny roots show themselves about an inch or more in length, fill up the vial with a rich composted soil; let it hang for two or three days longer, then break off the glass carefully, without disturbing the roots, and pot the plant.

Managed in this way the roots receive no check, and the plant will grow very vigorously. The cutting can be taken from the water and the roots planted in pots, but they will cling closely together, and are not as naturally disposed as when the glass is broken off, after the roots are covered with soil.

If the water evaporates a third or more in the vial, it must be filled up with warmish water.—*Floral Cabinet.*

Cabbage-worms.—A correspondent of the New York *Tribune*, from Jonesboro, Tenn., says, Cabbage-worms may be got rid of, by putting a few stalks of the well-known herb Penny-royal, on every head of Cabbage. The worms will quickly disappear.

A friend informs us that he drives the worm from his Cabbage by scattering wheat-bran over the growing plants. There is something about the bran that is distasteful to the worms, and they leave immediately upon its being scattered upon the Cabbage. He repeats the dose once or twice. The bran does not injure the Cabbage.

TREE TRANSPLANTATION.

To the Editor of the Scientific American:—On page 37 of your current volume some one says: "Most persons make a fatal mistake in trimming trees when transplanted. Never cut off a limb or a twig till they (the trees) have a secure foothold."

This advice, in the *Scientific American*, at once becomes a powerful influence. Whatever affects the tree-planting interest is of national importance; and I can show by reasons sufficient, as I could by the experience of all successful tree planters, that the advice referred to is radically wrong, and should read: "Always cut down the top of a tree transplanted, so that the relative proportion be preserved between roots and branches."

A tree to secure a foothold in its new bed must make a new growth of wood both at the top and root; otherwise death results in all cases after transplantation. Most trees lose, in transplanting, the larger portion of their roots; how does this operate when the top is left of full size and untrimmed? The leaves come out full with the advent of spring; and it takes all the nourishment supplied by the remaining roots to support the leaves, and no new wood is made.

If the top of the tree is cut down and the leaf buds destroyed, then, of necessity, in order to put forth leaves, there must be a new woody growth; when this occurs, there is always a corresponding root growth, and thus a foothold is secured. Many trees, like the Sugar Maple, only make wood during a brief period in spring; consequently, if transplanted with ever so much care after this season, they invariably die.

A tree which continues making wood during the entire season, like the Willow and Locust, can with care be transplanted at any time; but it may be set down as a rule, with but few exceptions, that deciduous trees should only be transplanted when bare of leaves, and then the top left must be proportioned to the root.

To further illustrate the fallacy of the no-trimming theory, suppose that in putting out cuttings, as of the Cottonwood or Willow, a top was left. Does any one suppose that a new root would be formed? It is the growth of the new top that is accompanied by a new root growth; in fact they are inseparable. The everywhere popular White Elm and Sugar Maple, although exceedingly difficult to transplant successfully with large tops, will generally live and grow if every branch is cut off, and the short bare poles only set.

Rural Adornment.—Nothing contributes more to the appreciation of a rural home than its surroundings. Nothing is more seriously missed by the early settlers in a new country, especially by the female members of a household, than the shrubs and flowers which they have left behind them in their early homes. How many hearts have longed for the familiar Lilac-bush with its early, handsome, and fragrant clusters of flowers. What sweet memories of the ever-pleasing and beautiful Rose-bush; or, of the old-fashioned Snowball, with its masses of snowy flowers contrasting so finely with its dark green foliage; or the modest, unobtrusive little Wax-bush with its pearly blossoms, and in due time its strings of snow-white berries which refuse to drop from the slender twigs, long after the frost has stripped the green leaves.

Notwithstanding the absence of these and many other memory-honored shrubs

and flowers in the frontier homes, very much may be done to substitute for them native plants of perhaps equal value. There is a patch of wood not many miles distant from any settler, where some shrubs may be procured which will relieve the garden or the yard of its nakedness, and lend beauty and attraction, perhaps quite equal to those favorites which are now beyond reach. The kind of such shrubs will, of course, vary in different localities.

Ancient Timber.—Probably the oldest timber in the world, which has been subjected to the use of man, is that which is found in the ancient temples of Egypt. It is found in connection with stone-work which is known to be at least 4,000 years old. This wood, and the only wood used in the construction of the temple, is in the form of ties, holding the end of one stone to another in its upper surface. When two blocks were laid in place, then it appears that an excavation about an inch deep was made in each block, into which an hour-glass shaped tie was driven. It is therefore very difficult to force any stone from its position. The ties appear to have been the Tamarisk, or Chittim-wood, of which the ark was constructed, a sacred tree in ancient Egypt, and now very rarely found in the valley of the Nile. Those dovetailed ties are just as sound now as on the day of their insertion. Although fuel is very scarce in that country, those bits of wood are not large enough to make it an object with Arabs to heave off layer after layer of heavy stone for so small a prize. Had they been of bronze, half the old temples would have been destroyed ages ago, so precious would they have been for various purposes.

The Mulberry originated in Persia.

Flowers and the Flower-Trade.—The following remarks are furnished by Mr. M. B. Batcham, Secretary of the Ohio Horticultural Society:

"The use of flowers and plants for the decoration of parlors and tables, at fashionable parties and weddings, has increased wonderfully within a few years. It is not unusual for eight hundred or a thousand dollars to be expended for flowers and plants for a single occasion. The sale of cut-flowers in the city of New York is estimated at over a million of dollars annually. About one-fourth of this sum is expended in one month—at the season of Christmas and New Year's festivities, at which time the florists are all taxed to their utmost abilities, and extravagant prices are often obtained for choice flowers.

"The *Horticulturist* says the wholesale or trade price was, the past winter, for Rosebuds, $5 to $8 per 100; Camellias, $50; Tuberoses, $10; but the consumers pay double these rates. As spring approaches the prices decline. The little vine called *Smilax* is very much used, and sells for 50 cents to $1 per yard. Mr. Henderson, the great florist, says there are about twenty greenhouses, having an area of 20,000 feet, in New York and Boston, devoted to growing Smilax alone; and whole acres of glass structures devoted to Rosebuds, Violets, Tuberoses, etc.

"A Philadelphia paper says flowers are quite the rage there. It is the fashion now to send boxes of nice cut flowers as presents, instead of stiffly tied bouquets, and ladies greatly prefer this method, as the flowers keep fresh much longer, and can be used for a variety of purposes. Flowers purchased for funerals and weddings are of the most expensive kind, and yield a large revenue to the growers. In midwinter the price

of a handsome basket is from $10 to $50. Bouquets can be made from $5 to $25. Single Rosebuds cost 25 cents, and Carnations 20 cents. Smilax is sold for $1 a yard, and one spray of Lily of the Valley costs twenty-five cents. Wealthy people invest largely in flowers on all occasions of festivity. Large floral bells, which cost from $100 to $200, are ordered for weddings; then the brackets and vases must be trimmed and filled, and trailing baskets of rare flowers must ornament every table and tripod."

A Poisonous Plant.—A few years ago there was in the Royal Botanical Gardens at Kew, a specimen of probably the most poisonous plant ever introduced into England. It was the *Jatropa urens*, the properties of which are so noxious that its possession is positively dangerous.

The ex-curator of the gardens was one day reaching over it, when its fine, bristling stings touched his wrist. The first sensation which he felt was a numbness and swelling of the lips; the action of the poison was on the heart, circulation was stopped, and he soon fell, unconscious; the last thing he remembered being cries of "Run for the doctor!" Either the doctor was skillful, or the dose of poison injected not quite, though nearly, enough to cause death; but afterward the young gardener, in whose house the plant was placed, got it thrust into a corner, and would not come within arm's length of it. He watered the offender with a pot having an extremely long spout. In a short time, however, the plant disappeared altogether, and another specimen of the genus *Jatropa*, which was afterward introduced, vanished in the like mysterious manner. It was presumed that the attendants were secretly determined that such plants should not be retained in the houses, to cause the possibility of an accident such as that which happened to their curator. —*The Garden.*

A Neglected Source of Food—The African Earth-Nut.—Dr. Muter, in the pages of *The Food Journal*, calls attention to what he terms a neglected source of food. Some time ago, while investigating Cocoa by means of the microscope, he discovered an ingredient employed by way of adulteration to which he could give no name. Subsequently, he had a sample of the substance, offered at the Mark Lane Exchange as an article of food for cattle, forwarded to him for analysis. It now became necessary to deal with the matter seriously, and so further microscopic investigation led to the discovery that the mysterious ingredient was simply the flour of the African Pea or Earth-nut. Dr. Muter declares, however, that the bean of this nut is an excellent substance, which, instead of being used only as food for cattle, or by some adulterators more enlightened than their neighbors, should be everywhere recognized as a marketable article of human diet.

Althœa Frutex.—This handsome and showy shrub is properly an *Hibiscus*—a very numerous genus, comprehending no less, now, than forty or more species, most of them inhabitants of either India. It produces its flowers rather late in the season, but is a fine, hardy ornamental plant. The flowers are bell-shaped and of various colors, pale or bright purple with dark bottoms, white with purple bottoms, and yellow with the same.

These flowers being large, gay, and numerous, and the shrubs of compact, rather tall and good conical shape, make

an attractive appearance, and give the completest idea of the classic character. These shrubs grow naturally in Syria. Many of them are now grown double in their flowers, which form a valuable and beautiful variety. They are well suited for lawns as well as gardens. They rise with shrubby stalks to the height of eight or ten feet. The several varieties may be propagated by grafting upon each other, which is the common method of propagating the sorts with striped leaves. Their late blooming is an advantage when other flowering shrubs are more scarce. They remain a long while in bloom, and the flowers are very numerous.

Cinnamon. — Cinnamon bark is well known to all our readers. Boys and girls, as well as many grown people, like to scent it and eat it. It is an article of commerce, and great quantities are brought to this country every year. It is in daily use, but not many take any thought about how and where it grows, and how it is prepared for the market.

The Cinnamon plant is supposed to be a native of Ceylon, an island in the Indian Ocean, south of Asia, the people of which are called the Ceylonese. But this plant is cultivated chiefly by the people of China, not because a better quality or more abundant crop is produced, but because the Chinese are more industrious, and value commerce more highly than the Ceylonese.

These people have their Cinnamon harvest, when all hands are busily engaged, as we are in harvesting the productions of this country, but this harvest commences in May and continues until October.

The plants are not cut down and destroyed, but the twigs, or shoot-limbs, are carefully selected and cut off, ranging in size from a half inch to two inches—the smaller the better.

After they are cut from the plant, a knife made for the purpose is run several times through the bark, so that it may be easily stripped off.

After being stripped off, the bark is dried in the sun, and rolls up like quills. It is then bound into bundles of thirty pounds each, sewed up in mats, and sent to market.

The cassia buds which are procured at the drug and confectionary stores, and chewed to sweeten the breath, are the dried flowers of the Cinnamon-tree, gathered for commerce just before they burst into bloom.

Fuchsias from Seed.—Fuchsias are readily grown from seed, and usually vary widely from the original stock. The seed pods should be allowed to remain on the plant until they fall off; then lay them aside for a few days, or until they begin to decay. The seed may then be washed from the pulp and spread upon paper to dry. They may be sown immediately, or kept for a few months in paper bags. Sow the seed in fine, sifted soil, composed of leaf-mold and sand, covering not more than an eighth of an inch deep; sprinkle the soil with water, being careful not to wash away the seed; then place the pots or boxes containing them in a warm place, giving water as required. When the seedlings are large enough to handle, pot off singly into small thumb-pots. As the plants become large and strong, shift into larger pots.—*Rural New Yorker.*

The annual product of hay in the United States is not far from 25,000,000 tons. Worth $250,000,000.

RAIN-FALL IN SAN FRANCISCO, 1849 TO 1873.

RECORDED BY THOMAS TENNENT.

	1849.		1850.		1851.		1852.		1853.		1854.		1855.		1856.		1857.		1858.		1859.		1860.	
	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.
July	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.02	1	.....	..	.05	2	.....	..	.21	1
August	.....	..	.....	..	.....	..	.....	..	.04	1	.01	1	.....	..	.....	..	.05	2	.16	2	.02	1	.....	..
September	.....	..	0.33	4	1.03	1	.....	..	.46	4	.15	3	.....	..	.07	2	.....	..	.....	..	.03	1	.....	..
October	3.14	3	.....	..	.21	2	.80	1	.12	2	2.41	9	.....	..	.45	5	.93	3	2.74	4	.05	1	.91	12
November	8.66	8	0.92	7	2.12	5	5.31	12	2.28	12	.34	2	.67	7	2.79	9	3.01	11	.69	5	7.28	15	.58	3
December	6.20	12	1.05	4	7.10	14	13.20	20	2.32	11	.81	3	5.76	15	3.75	12	4.14	8	6.14	14	1.57	6	6.16	21
	1850.		**1851.**		**1852.**		**1853.**		**1854.**		**1855.**		**1856.**		**1857.**		**1858.**		**1859.**		**1860.**		**1861.**	
January	8.34	15	.72	5	.58	4	3.92	11	3.88	10	3.67	11	9.40	13	2.45	7	4.36	8	1.28	4	1.64	8	2.47	8
February	1.77	5	.54	4	.14	4	1.42	5	8.04	16	4.77	10	.50	4	8.59	15	1.83	8	6.32	18	1.60	7	3.72	8
March	4.53	7	1.94	9	6.68	14	4.86	6	3.51	11	4.64	12	1.60	5	1.62	6	5.55	8	3.02	11	3.99	13	4.08	8
April	.46	3	1.23	8	.26	3	5.37	8	3.12	9	5.00	10	2.94	6	.....	..	1.55	4	.27	4	3.14	8	.51	4
May	.....	..	.67	3	.32	1	.38	7	.02	1	1.88	6	.76	3	.02	3	.34	3	1.55	4	2.86	11	1.00	3
June	.....	..	.....	..	.....	..	.....	..	.08	2	.....	..	.03	1	.12	1	.05	1	.....	..	.09	2	.08	2
	33.10	53	7.40	39	18.44	48	35.26	70	23.87	79	23.68	67	21.66	54	19.81	61	21.88	56	22.22	68	22.27	73	19.72	70

	1861.		1862.		1863.		1864.		1865.		1866.		1867.		1868.		1869.		1870.		1871.		1872.	
	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.
July	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..
August	.....	..	.....	..	.....	..	.21	3	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..
September	.02	1	.....	..	.03	1	.01	1	.24	2	.11	2	.04	1	.....	..	.12	1	.03	1	.03	2	0.14	1
October	.....	..	.40	2	.....	..	.13	3	.26	4	.....	..	.20	1	.15	3	1.29	2	.....	..	.11	2	0.21	1
November	4.10	12	.15	3	2.55	5	6.68	8	4.19	10	3.35	12	3.41	6	1.18	5	1.19	5	.43	4	3.72	9	2.62	3
December	9.54	16	2.35	9	1.80	8	8.91	18	.58	8	15.16	18	10.69	18	4.34	11	4.31	7	3.38	8	16.74	14	7.25	10
	1862.		**1863.**		**1864.**		**1865.**		**1866.**		**1867.**		**1868.**		**1869.**		**1870.**		**1871.**		**1872.**		**1873.**	
January	24.36	18	3.63	9	1.83	5	5.14	9	10.88	16	5.16	15	9.50	17	6.35	14	3.89	9	3.07	7	4.22	9	2.17	8
February	7.53	10	3.19	10	.....	..	1.34	8	2.12	9	7.20	9	6.13	9	3.90	5	4.78	9	3.76	10	6.97	18	4.24	17
March	2.20	11	2.06	8	1.52	9	.74	4	3.04	12	1.58	7	6.30	12	3.14	12	2.00	8	1.29	8	1.64	9	0.78	4
April	.73	9	1.61	9	1.57	4	.94	3	.12	1	2.36	8	2.31	9	2.19	5	1.53	4	1.93	5	1.10	6	.....	..
May	.74	5	.23	2	.78	5	.63	2	1.46	6	.....	..	.03	2	.08	2	.20	2	.21	3	.16	2	.....	..
June	.05	1	.....	..	.....	..	.....	..	.04	1	.....	..	.23	3	.02	1	.....	..	.....	..	.02	2	.....	..
	49.27	83	13.62	52	10.08	37	24.73	59	22.93	69	34.92	71	38.84	78	21.35	58	19.31	47	14.10	46	34.71	73	.....	..

METEOROLOGICAL RECORD,

FOR THE MONTH FROM MARCH 28TH TO APRIL 27TH, 1873.

Prepared for THE HORTICULTURIST by THOMAS TENNENT, Chronometer and Instrument Maker, Battery Street, opposite the Custom-house.

BAROMETER.

Mean height at 9 A.M. .....30.20 in.
do 12 M. 30.20
do 3 P.M. 30.18
do 6 P.M. 30.17
Greatest height, on the 7th at 9 A.M. 30.43
Least height, on 24th and 25th at 6 P.M. 29.00

THERMOMETER.

(In the shade and free from reflected heat.)

Mean height at 9 A.M. .....55°
do 12 M. .....59°
do 3 P.M. ..... 60°
do 6 P.M. .....56°
Greatest height, on 15th at 3 P.M. .....70°
Least height, on 4th at 9 A.M. .....46°

SELF-REGISTERING THERMOMETER.

Mean height during the night.....39°
Greatest height, on night of 18th and 20th.....45°
Least height, on night of 5th.....28°

WINDS.

North and North-west on 14 days; South and South-east on 1 day; South-west on 6 days; West on 10 days.

RAIN GUAGE.

March 30th.....0.01 inches.
April 2d.....0.08 "
" 20th.....0.35 "
Total.....0.44 inches.
Total rain of the season up to date.....17.84 "

WEATHER.

Clear on 10 days; variable on 12 days; cloudy and foggy on 8 days; rain on 3 days

Bouquet of California Wild Flowers.

1. *Long-Petaled Iris.*
2. *Western Honeysuckle.*
3. *Guinea Hen Flower.*
4. *Lindley's Primrose.*
5. *California False Wind-Flower.*
6. *Downing's Beauty (Lobelia.)*
7. *Venus's Looking Glass (Cat's Ears.)*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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FERN CULTURE.

BY F. A. MILLER.

The cultivation of Ferns seems to be the prevailing popular horticultural refinement of the day. A taste for the beautiful is gradually developing itself among us. Certainly Ferns are becoming the favorites with our amateur gardeners, first on account of their exquisitely graceful foliage; and secondly, because most of them are easily taken care of. But my use of the term foliage is really incorrect; their foliage-like shoots being more properly called "fronds," on the under side of which the seed is produced in the shape of spores—powder-like atoms—which are capable of developing themselves into plants by proper treatment.

While the spores of some varieties of Ferns develop themselves into plants without difficulty and under very ordinary treatment, there are many other kinds which are extremely difficult to propagate in this way, and which must be multiplied by dividing the root after it has become sufficiently strong; and this is the best and most successful mode of propagating Ferns.

However, as new varieties are continually in demand, and can not be obtained by importing the living plants, the planting of spores must be resorted to. In some cases I have seen the young plants developing themselves in from two to three months; but in a majority of cases the spores will lie dormant for over a year, when some will move into life, while others will be found to be without any sign of vitality.

The spores should be planted upon old pieces of wood overgrown with moss, or in sphagnum; or if neither of these are to hand, cut up some common moss and mix with it some pure white sand, scatter the spores over the surface, cover closely with glass, and put in a shady and warm situation. By keeping the glass cover close over the surface, the spores will not require any water for several months. Allow them plenty of time to move, and do not disturb the soil until you are positive that the spores are totally lost.

The propagation by division of the roots is very simple. Take off the offsets carefully with some roots attached to each portion, plant in small pots, water well, and keep well shaded for a week or two.

Some few varieties of Ferns produce young plants upon their fronds. As soon as these have formed two or three small

fronds, they should be taken off and planted into small pots, and be well shaded.

The best soil for Ferns is one-third white sand, one-third leaf-mold, and one-third fibrous peat. Sphagnum is most excellent for Ferns, but it is very difficult to obtain here; fibrous peat is also very scarce, and if it can not be had, I would recommend one-third of light loam mixed with finely cut moss and moss roots, and two-thirds of leaf-mold and white sand.

All Ferns grow best in shade, and most of them require a moist atmosphere. In greenhouses and conservatories, they grow best under the shade of other plants, or remote from the bright light. I have seen some varieties of Adiantums thriving admirably well under the shelves of the greenhouse. If grown in rooms, the dry atmosphere predominating there will not permit them to vegetate freely for any great length of time; and if the fronds are covered with dust, the plants will soon perish. The ever progressive science of Floriculture, however, has come to our aid, in the construction of "Fern-cases," which are now all the *furor* in Europe and in the East. The first Fern-cases were constructed and came to public notice at the World's Fair, held in London in 1851, and since then the idea has met with favor everywhere, and they are now among the most popular ornaments for the window-garden and the parlor.

Fern-cases are constructed in all possible forms; the sides and tops being of glass, and made air-tight for the purpose of confining the moisture and preventing its escape, the evaporating water being condensed within the inclosed space. This is just what Ferns are in need of; and I may inform the reader, that Ferns once planted in a Fern-case and well moistened will not require any more water for several months, if kept perfectly air-tight. Some Ferns, perhaps, will do better if the Fern-case is occasionally ventilated, but most of them do not require it. It can therefore easily be seen, that the Fern-case requires no care whatever, and may be placed almost anywhere in the drawing-room, the parlor, or any other desirable locality.

At some other time, I will give a list of the best Ferns for cultivation, both in and out of doors, comprising such varieties only as may be obtained in this market at a reasonable price.

SPONGE ON THE SAN DIEGO COAST.

From the numerous specimens of Sponge found on the beach and in the caves of La Jolla, it is very probable that extensive beds of this valuable article of commerce exist somewhere in the neighborhood. Most of the Sponge of commerce is now procured from the Mediterranean Sea, more especially about the islands of the Archipelago and in the Levant. They are found adhering closely to the bottom, and require some force to be detached. The fishing is carried on principally by divers, although some is done by spearing, which, however, materially injures the Sponge. The inhabitants of a small town named Cranidi, about twenty miles southeast of Nauplia, are the most expert divers, being trained to the business from their infancy. After being fished up, the Sponge, when perfectly free from sand and dry, is exceedingly light—almost as light as down, being moved by the slightest breath of air. There is a little trickery practiced in this business as in all others, and the sponges before being taken to market are laid on the beach to allow the ripple

of the sea to slush them with the finest particles of sand. They are then gathered together in heaps, and pressed close enough to become hard and flat when dry. Notwithstanding they may subsequently undergo a thorough washing and sifting they will weigh three or four times their original weight. The principal Sponge market in the world is Smyrna, in Asia Minor.

The pieces of Sponge that have been from time to time found on the beach at La Jolla are of excellent quality. A careful examination of the bottom a little distance from the shore might result in the discovery of an extensive bed of this zoophyte.—*San Diego Union.*

Absorption of Moisture by Leaves.—Mr. M. Cailletet has lately been investigating the question as to whether the leaves of plants are capable of absorbing water in a liquid state; and sums up the result of his experiments, by stating that the fact seems to be demonstrated that a plant growing in a humid soil and receiving by its roots the quantity of water necessary to its normal condition, does not absorb the water which moistens its leaves, but that such absorption takes place as soon as the leaves begin to wither, in consequence of the desiccation of the soil. In this way he explains the phenomenon of certain plants, maintaining a healthy condition without any contact with the soil, and even absolutely isolated from all assimilable substances. Thus, a specimen of *Pourretea*, a rootless Bromeliacious plant, maintained a healthy existence and exhibited considerable increase in weight, while suspended for more than six years in the air by a wire. No moisture ever reached it except that from the garden syringe, and yet it was continually putting out new leaves and flowering abundantly.—*Gard. Monthly.*

CALIFORNIA WILD FLOWERS.

BY DR. A. KELLOGG.

We present the readers of The Horticulturist and Floral Magazine a small bouquet of wild flowers found in the vicinity of San Francisco.

Flowers are ever the symbols of wisdom and purity. Tokens of the genial, sunny side of humanity, they bear on their gay wings kindly messages of good to all. Radiant and charming with divine philosophy, and sweet as is Apollo's lute, they bring again the blessed angels of joy to the hearts of old and young. These are the wise fables of the fairies, now as ever so beautifully true.

The first (or No. 1) is the Long-petaled Iris (*Iris longipetala*), or Large-flowered Fleur-de-lis, the first flower of spring; abounding upon open hill-sides and in springy dales. The flower is of a delicate sky-blue ground, with deep purple-blue veins, on stems one to two feet high; very much sought after on the continent of Europe, and greatly admired for its peculiar style of beauty.

We have also the Douglas Iris (*Iris Douglasii*); flower of the deep rich radiance of the rainbow; of varied hues, from prevailing indigo to rose-color, delicate flesh-color, and white; a plant of intermediate size, which unobtrusively seeks the shelter of shrubs and the shades of the woods. The Golden Iris is by some considered a variety of this.

There is also the little Long-tubed Iris (*Iris macrosiphon*), of deeper, brighter, richer hue than any other, varying to purple and indigo. Its glossy, shining, varnished leaves arch over sidewise in the most graceful possible manner. It is the prettiest border plant in the world. The long line of reflected light from the bow of its arch is the most cheerful sight (if allowed expression to

feeling), of the most vivid sheen of living green our eyes ever beheld. The flowers, too, are very remarkable for the length of their tube (four to five inches), as the name imports. Add to all this the enlivening fragrance, and the consummation seems complete.

No. 2 is the Western Azalea, or Western Honeysuckle Shrub. Among the large family of Azaleas on this continent, perhaps, all points considered, that of the Bay of San Francisco surpasses them all. Let us review for a moment the ground of this opinion, so that we be neither prejudiced nor partial judges.

To our female friends, and all admirers of *white flowers*, it commends itself by this prime prerequisite. An emblem of chaste purity and innocence—fragrant as the affections that ensphere all true hearts—it embalms the breeze, and exhilarates every circle it enters. It has just shade enough of slight buff, or of faint creamy-yellowish hue, to give richness and variety to one lip—and sometimes, like a country lass, it dons a slight pink blush or tinge of modesty. These flowers are not too hasty in their appearance before the public gaze, untimely suing for admirers, but patiently bide their time, until properly clad with the emblems of due intelligence. Then, amply adorned with new and freshening foliage, the flowers in bountiful clusters display themselves against this cheerful background of green in all their glory. And, as if to signify its queenly pre-eminence, the shrub is peerless in height, rising from fifteen to twenty feet. In the clear streams that go softly meandering the meadows, the Western Honeysuckle delights to bathe her feet; or, with laudable ambition, climbs the hills and tall steeps along margins of sweet brooks that "murmur melodiously among the smooth pebbles." Other Azaleas are too often naked and bare of foliage when in bloom, yet have they their peculiar and appropriate beauty. In colder climes, the sun and diamond rain-drops often more than supply the lack of leaves. Having been a witness to many, if not all, of the most brilliant and charming of these native shrubs, north and south, to Alaska, we know of none so striking and exquisitely beautiful, where all have beauty, as the one of the Far West—the crowning glory of our land! Mr. Jas. Lick, and perhaps one or two others, have appreciatively taken this shrub under cultivation. Mr. F. A. Miller is the first nurseryman and gardener, so far as we know, who has yet started it from seed. Why do the invisible heart-associations cling around some correspondent visible object, like this shrub? If ever mortal ears thrill to celestial songs, or, listening to their like, conceive a faint and far-off idea of the blest abodes, it is when the spring shower is over and gone, and the warbling notes of the Hermit Thrush in rolling numbers echo sweetly from out the hollow resounding woods, as we rove in Honeysuckle bowers. Startled and entranced, silent and alone! . . . . Did we listen to the song of angels, unawares?

No. 3 is the Lance-leafed Checkered Bells (*Fritillaria lanceolata*), Guinea-hen Flower, or Rice-root Lily of the miners. Of these we have several species. The nodding bell-shaped flowers are checkered with square or slightly oblong-square spots, similar to a checker-board, of dark madder-purple on a greenish or reddish ground-color. The flower-stem is one to two or three feet high, with lance-shaped leaves in a whorl around the smooth stem below, with a few scattering ones above. In the young state it has but one leaf, very broadly

lance-form, or somewhat general oblong egg-shape, smooth, and of tender, fleshy, herby texture; the leaf-stem about equal in length to the blade. This root-leaf is usually absent the year it blooms. The bulb makes ample provision for future contingencies, by multiplying innumerable little baby-bulblets from the mother bulb, that surround the base. When disturbed, they so easily detach, that the earth is filled with them, like grains of rice; hence the miners' name. The "Edible Lily" of Kamtschatka (*Fritillaria Kamtschatcensis*) mentioned by travelers, is a species of this plant, as verified by personal observation in our expedition to Alaska some years ago. The Red Bells (*Fritillaria recurva*) of Mendocino County is by far the most beautiful of the species; the Edible Lily is the nearest approach to it, and a very fine species. The Red Bells, or Dwarf Lily, is in shape exactly the same as the true Lily. The black spots or checks are very distinct—a perfect prescript of the modern chess-board and Scotch plaid.

No. 4 is Lindley's Primrose (*Œnothera Lindleyi*), a choice one among the many beautiful species found in this vicinity; perhaps the best selection that could be made. The flowers are of a cheerful bright rose-color, with deep red or crimson spots at the base of each petal or flower-leaf, so that the general bright base gives brilliant effect and character to the blossoms: these are about two inches in expansion. The top of the plant, a foot or so in height, is broadly branching, open and airy, with recurved spreading branches and summit. The stems and leaves are so slender and unobtrusive, that, a little way off, the flowers seem dancing and courtesying magically in the air. Our *Œ. arcuata* may prove a variety of this, with darker purple flowers and sickle-shaped leaves.

No. 5 is the California False Windflower (*Anemopsis Californica*). This plant in the leafy state somewhat resembles the common Water Dock, with which it is often found growing. It may be seen on the margins of miasmatic marsh lands. Here, as ever, we find native antidotes which in mercy the All-Father's finger points out—ever laying the soothing hand of blessing over even fens and pools of filth—following mortal men and things into the stagnant mires they will not reclaim. It is one of the best stomachic stimulants and tonic ague remedies known, due exceptions always being given to Peruvian bark and its common allies. Five to fifteen grains, or one-fourth to one half a teaspoonful of the powdered root, should be taken three or four times a day; also, chewed in the mouth constantly for chronic affections of the throat and breast. Although found on the marshes bordering the bay at Oakland, the flower there has not the brilliant scarlet tinge we see in specimens from the interior of the State. It is highly probable there may be two species of this interesting, ornamental, and useful plant.

No. 6 is Downing's Beauty (*Downingia elegans*). This Lobelia-like flower sports some modest and gay colors, besides the pure cheerful white and blue of its more common hue. This is seen oftener in the interior of our State. It is a tender, succulent, spreading little herb, just suited to the parlor; is very fond of company, and found in patches or "fairy circles" around little lakes or basins, in adobe or strong black cracky clay soils. At Alameda it tips a bright wink by the wayside at the traveler, and abounds in the lowlands of San Rafael, the San José Mission, and elsewhere. If one were always in the mood to play the *role* of old Esculapius, there are

virtues that bloom unnumbered beneath our feet. But there are other and higher virtues that gleam from *Beauty's* eyes —truly the greatest solace of the soul. Thence, perchance, we deem this gross clay of ours only second-best—our second self.

No. 7 belongs to a plant with heart-shaped leaves, cowled and thrown back like a dashing old "calash" bonnet, yet very affectionately clasping the rough stem; found commonly in sterile soils, or infesting corn-fields; *some* better than a weed, being ornamental if not useful. This is Venus's Looking-glass (*Specularia perfoliata*, var.). How she ever came to peep into this little blue eyed beauty, history gives no account. It is very likely, however—nay, morally sure, in a certain sense—that, as the plant is a variety of Cat's Ears, and Venus being one of your parlor cats, she just as naturally took to it for a mirror, as do ducks to water.

HORTICULTURE AS A PROFESSION FOR YOUNG LADIES.

A very able suggestion for a new profession for gentlemen was made by a correspondent of the *Pall Mall Gazette* a short time since. Referring to the want of technical knowledge among amateur lovers of Horticulture and persons possessing small gardens, and the great difficulty of obtaining the services of an educated, well-informed gardener, he suggests that Horticulture be raised to the rank of a profession. "A large proportion of people having gardens can not afford to keep a gardener, and would not have work for one if they could. They are driven to the precarious assistance of men who, with the smallest possible knowledge, work at high wages by the day. Even those who have money enough and soil enough to 'keep a gardener' are fortunate if they can get one, at the ordinary wages of a curate, with any knowledge of his business. There is a great want among middle-class people in the neighborhood of London, and other great cities or towns, of an intelligent knowledge of Horticulture. People would be willing enough to pay for this knowledge if they could only get it. Our Roses or our Grape-vines develop symptoms of disease, and we do not know how to arrest it. It is easy enough in the case of the 'human subject.' We send for the doctor. We send for a man who has made medicine or surgery (perhaps both) the study of his life, and he tells us what to do, and, if necessary, he does it. Now, why should we not know to whom to send in our horticultural dilemmas? Why should we not have our diplomatized horticulturists, to whom we might send to rescue our trees and flowers from disease or death? Surely, it is pleasanter occupation to bud Roses or to prune fruit-trees, than to cut off human legs or arms, and to extirpate horrid cancers? A thorough knowledge of Botany and Horticulture is not more difficult to attain, and is not less ennobling when attained, than an equal knowledge of surgery and medicine. Why, then, should these pursuits not be erected into a 'gentlemanly profession?'" Why may they not, indeed? And why not, I beg leave to add, into a ladylike profession? I place the suggestion before the readers of the *Queen*, as affording a new and perfectly legitimate opening for the employment of women, and in a field in which numbers of ladies already excel, more particularly as practical gardeners, *en amateur*, no doubt, but with a skill and taste which are not to be met with in men following the profession or business of

gardeners, except a few at the very top of the profession. Why should we not have our female Paxtons and Kents? Mrs. Loudon, instructed no doubt by her talented husband, imbibed a great taste for and love of the art; and other ladies might find in Horticulture a profession which would be remunerative, and could not detract in itself in any way from their social *status* as gentlewomen.

Leaving the laying out of landscape gardens and parks to the gentlemen, there is still, in other branches of gardening, a wide field open, in which ladies thoroughly educated in the science of Horticulture and Botany might find employment, and in which their less fortunate sisters, with ordinary strength and less preliminary training, might work. I remember, a short time since, reading an account of a college or school of Horticulture for women in America, and it has long been matter of astonishment to me that, in the present dearth of remunerative employment for women of the middle-class, no one has yet thought of making them "gardeners." The idea was suggested many years ago, in my hearing, by a well-known literary gentleman, and was called forth by the universal—and it now appears never ending—complaints of the want of knowledge, and, I am sorry to add, the predatory habits of the numerous jobbing gardeners my mother had in her employment. I remember that one of my sisters and myself, in utter despair of getting any good work or good result in the way of flowers for effect, or fruit for eating, from the coachman-gardener and his numerous myrmidons of gardeners by the day, took upon ourselves the entire superintendence of the greenhouse and out-door garden. The former was a very large one, the latter a good sized suburban piece of ground. We only stipulated for the services of the man to remove large pots, dig the ground where very heavy, and wash the greenhouse; he was to be entirely under our orders. We went to work with enthusiasm, determined to succeed, and, as a matter of course, we did succeed beyond our hopes.

Of course, if there are women (but I am loth to believe it) so foolish as to be afraid of soiling their hands or spoiling their complexion by being much out in the open air, I do not address them. My suggestions are meant for those who look upon the duties of life seriously, and who, being compelled by circumstances to earn their daily subsistence, would find in Horticulture not only a remunerative but a delightful occupation; and if the *Pall Mall* correspondent be correct in his views, it would pay. He says: "Of course, the question may suggest itself, will it pay? I am quite disposed to think it would. I, for my part, and I have heard others say the same, would often be glad to pay my guinea for a visit from a skilled horticulturist." If the want of scientific knowledge among working gardeners is as great as this implies, women, by taking up the profession, could do no injury to the other sex; they would oust no one from his place, and would simply step into a void, filling up the gap between the shining lights of Horticulture and Botany, and the ignorant, obstinate, jobbing gardener, who very often takes the name of one without any knowledge of the duties, but a great idea of the perquisites of the situation.—*The Queen.*

Sponges of good quality are found on the coast of Florida, but the fishing is not extensively prosecuted there.

HEDGES.

BY E. J. HOOPER.

The subject of hedge fences is an important one with us. Every year, as timber becomes scarcer, the necessity (as well as the love of beauty, both in gardens and fields), for some substitute for posts, rails, and boards, becomes more apparent. One of the most expensive items in a fruit or flower cultivator's accounts is his fencing bill; no one is so well acquainted with this fact as himself. That he does not immediately accord to live fences the preference, is simply because, with all his knowledge of the continued cost of the present system, he is not sure that, without a cost still greater, live fences can ever be made equal to the wooden ones in service for all the purposes to which "post and rails," etc., are applied. We must confess that when we look at the few live fences that we see in any part of California, there is good reason for this indifference, and even dislike to the—as some say—"new-fangled notion." Wherever these attempts have been made at hedging, it would be difficult to point out even a single instance in which a genuine farmer or horticulturist would not reasonably prefer some kind of wooden fence. We are continually reminded of the hedges of Europe by newspaper writers, who hold up those affairs as models worthy of imitation. But, we who "have been there," and we think are tolerably well acquainted with the subject, know that very good hedges even there are rather the exception than the rule; and that these have to be kept up at a very considerable annual expense. We consider that much of whatever effectiveness European hedges do possess, is more owing to the "ditches" which are there accepted as the legal boundaries to property, as well as the divisions of fields and gardens from one another, than to any great merit in the hedges themselves. These hedges, for the most part, are full of what are there called "gaps," or open places, made by the breaking through of boys, sportsmen, and other unruly cattle; and after every bi-yearly trimming which they receive, a horse and man is employed in carting the clippings to these open spaces, and they are there used to mend these "gaps" with. No wonder, then, that with these poor examples nearly everywhere before them, our cultivators of the soil are very suspicious of change.

Notwithstanding all this, with good materials, or, in other words, with the proper shrubs, and with good judgment and proper pains, we can make in this highly favored soil and climate very good hedges, and when the science of the subject is understood, can make them superior to anything Europe can produce. There they chiefly use the *Cratægus* or White Thorn; and this plant is a valuable one for us possibly, if it can stand drought. We have also some excellent plants with which to make them, and which are superior to any of the materials of which foreign hedges are made. I allude, for instance, to the Osage Orange; for another, the Honey Locust; and for a third, that plant lately recommended and found in this State in great abundance—the California Wild Cherry—(*Cerasus illicifolia*). The first has proved an invaluable boon to the farmers of Illinois and the prairie lands generally, where timber is very scarce; and in England just now, its introduction there is exciting universal attention. The second forms a strong hedge, and has been found successful in the East in turning effectually all stock; and the third, although not yet tried to any ex-

tent, has every quality to make a good hedge in our climate, and has succeeded as a beautiful hedge with F. B. Fuller, opposite the Los Gatos Nursery.

In starting to make a hedge of either of these, it must not be forgotten that they are, all of them, naturally *trees*; and as we want them to become shrubs when in the condition of a hedge, we have to resort to peculiar treatment to make them alter their nature. The object is to check their tree-growing, upright tendency, and to make them dwarf and very bushy. Now, one of the very worst modes of effecting this, is to give them severe prunings at the fall of the year, and little or no attention in the summer season. Yet this is the almost universal practice with those who try them. At the time of planting, the plants are cut to within six or nine inches of the ground, and every succeeding fall or winter, for three or four successive years, cut nearly back to where they sprouted from. They generally get a shearing about August or September—not sooner; a few weeds are taken out once or twice a year, and this is their almost invariable course of treatment.

An experienced physiologist will at once perceive that this practice will never make a good hedge out of subjects naturally trees; but this is not so apparent to the "uninitiated." To them it seems one of the most natural things in the world, that to make anything bushy, all that needs to be done is to head it down. But this is only true under certain conditions.

The first process with hedge *trees* is to make them *shrubs*, which must be done by some of the known principles of dwarfing. There are three recognized modes of dwarfing trees, namely, ringing, root-pruning, and summer-pruning. The two former being impracticable in such an extensive affair as hedging, the last mode is the only available one for the purpose. Summer-pruning has a very remarkable effect on trees, the exact reverse of pruning when plants are in a comparative state of rest. If a tree is cut down immediately after the fall of the leaf, or in September or October, the next season it pushes forth with renewed vigor, determined, as it were, more than ever to be the tree nature designed it. So great is this power given it by the winter or late pruning, that if a few successive years of this system were persevered in, without any counteracting influence from summer-pruning, what few side branches the stump had made would be entirely destroyed, and nothing would remain but a dense mass of erect, strong-growing shoots. On the other hand, cutting off the shoots of trees immediately after they have put forth in the spring, so weakens them, that in a few years the trees would die outright.

It is obvious, that to make a good live fence out of trees—that is, to make them become good shrubs, with a uniform growth both at the sides and at the top—some discrimination is necessary in the matter of pruning. The strong-growing central shoots only should be cut off in summer, and this, too, before they have completed their season's growth. The sides should be encouraged to make the strongest growth possible; which is to be attained by pruning in the winter, and in the winter only.

If these principles were duly recognized, live hedges would cost but half the expense they now do; because, though they would have to be gone over twice a year, they would in fact receive but one complete pruning.

We conceive that in offering these

remarks, by bringing this subject before the thinking portion of the community, from whom the most substantial knowledge is dispensed to the tillers of the soil, who, in general, are too apt to undervalue what is called mere book knowledge, we are aiding a not unimportant branch of horticultural knowledge.

FLAVORING WITH LEAVES.

Leaves are more or less popular for garnishing, but it has often surprised me, says a correspondent of the *Garden*, that they are so little used for flavoring. With the exception of sweet and bitter herbs grown chiefly for the purpose, and Parsley (which is neither bitter nor sweet, but the most popular of all flavoring plants), comparatively few other leaves are used. Perhaps I ought also to except the Sweet Bay, which is popular in rice and other puddings, and certainly imparts one of the most pleasant and exquisite flavors. But, on the other hand, what a waste there is of the flavoring properties of Peach, Almond, and Laurel leaves, so richly charged with the essence of Bitter Almonds, so much used in most kitchens! Of course, such leaves must be used with caution, but so must the spirit as well. An infusion of these could readily be made, either green or dry, and a tea or tablespoonful of the flavoring liquid used to taste. One of the most useful and harmless of all leaves for flavoring is that of the common Syringa. When Cucumbers are scarce, these are a perfect substitute in salads or anything in which that flavor is desired. The taste is not only like that of Cucumbers, but identical—a curious instance of the correlation of flavors in widely different families. Again, the young leaves of Cucumbers have a striking likeness in the way of flavor to that of the fruit. The same may be affirmed of Carrot-tops, which are as like carrots in taste as may be. In most gardens there is a prodigious waste of Celery flavor in the sacrifice of the external leaves and their partially blanched footstalks. Scores of sticks of Celery are cut up into soup, when the outsides would flavor it equally well or better. The young leaves of Gooseberries added to bottled fruit give a fresher flavor and a greener color to pies and tarts. The leaves of the Flowering Currant give a sort of intermediate flavor between that of Black and Red Currants. Orange, Citron, and Lemon leaves impart a flavoring equal to that of the fruit and rind combined, and somewhat different from both. A few leaves added to pies, or boiled in the milk used to bake with rice, or formed into crusts or paste, impart an admirable and almost inimitable bouquet. In short, leaves are not half so much used for seasoning purposes as they might be.

Utilization of Sawdust.—M. Gustave Hueze says that, though sawdust decomposes very slowly, yet it may be economically used as a litter in stables, and left for several months in contact with the solid and liquid excrement of animals, which it readily absorbs. It may also be composted with quick-lime and left in a heap for about a year. Additions may be made to this heap from time to time, but, when such additions are made, the whole heap should be well stirred. It will be improved by being frequently saturated with urine or sewer-water. Sawdust thus treated may be used on partially exhausted soils with great advantage.—*Department of Agriculture.*

The vintage of the Australian vineyards is estimated at 500,000 gallons.

THE CULTURE OF CAMELLIA JAPONICA.

Read before the Bay District Horticultural Society

BY R. MICHELSEN.

In presenting this essay for consideration, it is not my intention to give the results of experience in this country of the culture of this valuable plant, because we may safely assume, the Camellia has never been cultivated here! For importing plants from the East, potting them and giving them a place in the greenhouse, and only looking after them when the flowers are developing, can not be called cultivation in the proper sense. Cultivation is the continued effort to bring it to its highest possible standard of perfection; or, to what I especially refer, the raising it in large quantities for the trade.

Heretofore our nurserymen, who should be leading cultivators of those plants which require a more careful and peculiar treatment, never found the necessary time for it; they, I deeply regret to say, joining the general exertion for the acquirement of material wealth as fast as possible, neglected those plants which did not bring the desired pecuniary results at shortest notice. I feel confident that the raising of Camellias, after once being fairly started, would prove to be more renumerative than those plants that anybody can raise easily in large quantities in a short time. The growers of Camellias would be more protected against competition, by the very nature of the plant; as it takes at least three years before a plant is salable, and those plants which arrive here from the East are at least doubled in price on account of freight, loss on the road, etc. Instead of importing Camellias, they should be made an article of export, as we have considerable advantages in raising them, in regard to climate, over the eastern cultivators.

All vegetables grow here to the greatest perfection. California has become proverbial for its immense production of plants, flowers and fruits, and there is no good reason why we should not be just as successful with Camellias. It is asserted, even by practical horticulturists, that the climate is not favorable! The air is too dry, dust, scorching sun, etc., are the only reasons given; but have not the cultivators of this noble plant elsewhere also to battle against these adverse influences, besides a great many more? I need only to mention the long, cold and damp winter they suffer in the East and in Europe, to give a thrill of horror to every experienced horticulturist.

The Camellia is here cultivated in greenhouses only, and the impression appears to be general, that it will not grow in the open air, and even not in frames, although it is a perfectly hardy plant; more insensible to the effects of cold than *Cycas revoluta*, *Chamerops humilis*, etc., which do well in sheltered localities. If proper attention is paid to the Camellia, and it is sheltered against wind, heavy rain, and excessive heat, and receives such soil as its peculiarities require, and good drainage, I have not the least doubt its growth would afford perfect satisfaction. Regarding no other plant, it may be safely said, do more differences of opinion exist in reference to its culture, even among successful cultivators, than of this plant; thus showing that the Camellia is in fact not very particular as to the mode of its treatment. This, however, will be conceded by all, that it must be moderately shaded against the scorching sun; that it should be kept rather moist during the flowering season and while it is forming new leaves, and when these are hardened the supply of water should be gradually diminished, and the soil

be kept comparatively dry, while the plants should be sprinkled twice a day to assist the newly forming buds in developing into flower-buds, otherwise they are likely to start afresh into second growth, and then, in most cases, all the flowers are lost.

In regard to the proper soil, opinions differ widely. I have seen Camellias cultivated in rich, fibrous peat, mixed with one-half sand; they grew in this soil, in frames, as thriftily as a *Pittosporum tobira* grows here in the open air. But as peat of that quality can not be obtained here, I would recommend a mixture of three parts rich loam, two parts peat, and one part sand. Our eastern friends appear to prefer a heavy soil for Camellias; the ball of the imported plants is always as hard as a brick. It is really surprising that the Camellias do not give it up in despair, before they are considered sufficiently strong to be sent out to California.

Let us now turn our attention to the raising of plants. Begin at the beginning, and make the cuttings with three to four eyes early in spring, put them in the bed in the propagating house, cover them with extra glass, keep them close, and give regular bottom heat of about 75° to 80°. In about two months they will make roots; when these have attained sufficient strength, give the young plants three-inch pots, and put them in a moderately hot bed. After they have made here their first growth, and the leaves are hardened, the better varieties may be planted out in a frame, while those which have to be grafted must be kept under glass until August of the following year, when they will be strong enough for the operation.

This grafting is a very simple process: a cut is made half through the stem on a convenient place; the scion is cut wedge-like on both sides with a clean cut, and of the length of about two to three eyes; insert it into the stem, tie some soft cotton string around it, and put the plant in a propagating house; this should be kept moist and close; the plant should not be sprinkled. If the operation is performed carefully, the scion will have formed connection with the plant in six to eight weeks; then the new plant must be hardened gradually, be kept under glass during the winter, and planted out in a frame in the spring. The frame should be two and one-half feet high, the floor being nine inches below the walk; five to six inches of sand should be filled in, and on this a layer of six inches of soil. After these preparations are completed, all is ready for planting out the young Camellias. Plant them in rows, about nine inches, and the plants in the rows six inches, apart. The frame should now be kept close and well shaded; watering should be done in the morning. It will also have a very beneficial effect if the plants are sprinkled in the afternoon, before the sun disappears, and the frame then be closed. The water evaporating, will produce a moist, soft air, which will effectually prevent the red spider and other insects from infesting the plants. After the plants have made their first growth, they should receive more air. Whether it would be advisable here to remove the glass entirely during summer, and give shade only, I am not prepared to say; I am, however, inclined to the opinion, that it would be more beneficial to keep the plants under glass, especially as I have not the least doubt they will, after they have had sufficient rest, make a second growth, during which they should receive similar treatment to that in spring. The glass may be taken off during the fall, until the heavy rains set in. Next spring, before the plants begin to grow, they should be

cut back, according to size and strength of plant, in order to make them bushy and to get cuttings. They must now be treated as last year. The majority of the plants will be salable when they have finished their first growth; then they must be potted, put in a greenhouse, and be kept close and shady. There they must remain until fall, when they will have formed new roots, and then are ready for sale.

FISH CULTURE.

Nearly every known animal, large or small, has its own peculiar parasites or lice, that prey upon the larger animal, generally to its inconvenience, and oftentimes affecting the health. It would seem as though fish, constantly immersed in water, might be free from parasites, but such is not the fact. Livingston Stone, in his work on "Domestic Trout," says:

"It is well known that when trout become injured or unhealthy, a fungoid growth appears in blotches over the surface of their back, and usually terminates in fatal results in a few days. It has been supposed that the fungus eats into the tissue of the fish, and destroys it.

"The microscope reveals, however, that it is not the fungus that penetrates into the fish, but a multitude of microscopic worms. They are not found in the upper parts of the fungus, but just below the roots, or where the fungus joins on the surface of the skin. Here, between the roots of the fungus and the body of the fish are found hundreds of these creatures, incessantly in motion, and apparently eating vigorously.

"They are about one-eightieth of an inch in length and one two-hundredths of an inch in diameter, and are provided with a mouth, and at the other extremity with about twenty claw-like appendages for fastening on to the fish on which they feed. They are continually eating into the tissues of the fish, and the twenty tentacles enable them to fasten on so tightly that the fish can not shake them off. These parasites appear to live on the flesh of the fish, and the fungus to live on the digested matter into which they transform it.

"This discovery led to some experiments in search of a remedy, and it was found that a strong solution of salt destroys the parasites. Experiments were then made of immersing a trout in salt water, and it was found to be perfectly harmless, if not too long-continued. A method was thus found of killing the parasites without killing the fish, which fact was confirmed by actually taking a trout covered with fungus and immersing him in a salt bath for a moment or two, and afterward keeping him by himself for several days. The fungus peeled off, the parasites were killed, the bare spots healed over, and the trout got well.

"From all of which we may, I think, draw the following conclusions; That it is the worm, and not the fungus, which eats into and kills the fish; and that the fish can be cured, when not too much weakened, by immersion in a strong solution of salt. I used a tablespoonful of salt to a pint of water, and kept the fish in it till he went over on his back, and then took him out and put him instantly into cold running water."

To Prevent Rust.—It is said that equal parts of carbolic acid and olive oil, smeared over the surface of the instruments, are an unfailing preventive of rust in any climate.

Editorial Portfolio.

It is a source of deep regret and mortifying discouragement to us, that so little interest was taken in the late Floral Exhibition of our Horticultural Society, in this city, by the general public, and more especially by those of the community who affect a love of the beautiful and vaunt their refinement of taste. It is useless to plead horse-distemper, inclemency of the weather, etc., as these impediments did not prevent the attendance at other places of amusement; and it is evident that horse-racing, circus-riding, and the grimaces and antics of clowns, with the attendant noisy and coarse music, are more tasteful to a very large portion of our population.

Although we were in a measure suspicious of these preferences, yet we hoped a further advancement of taste had been made, and that although a creditable appreciation of the higher-grade music and purer and more natural delights of a flower and plant exhibition might not be displayed by the public, yet for the sake of their children, whose mental cultivation and refinement are largely assisted by such instructive displays, we trusted that sufficient patronage would have been awarded the Society to have at least reimbursed it in the actual outlay for the music, decorations, and the numerous etceteras, instead of leaving it some $2,000 deficient, independently of the unrequited labor of not a few enthusiastic members of the Society, whose bitter disappointment and disgust can be readily imagined.

We must nevertheless state, that there were many pleasing exceptions to this too general apathy, and we are happy to say, that, although the attendance was light, yet it consisted of the *elite* of our community, in education, wealth, and refinement, and that they were highly appreciative. It was doubtless on these points the best recognized of our fairs; and to these friends, as marking their approval of what they saw and heard, we suggest a kindly consideration of the following appeal, which the Trustees of the Society have considered expedient to address to them.

San Francisco, June, 1873.

Dear Sir:—It has been the misfortune of the Bay District Horticultural Society of California, to meet with a very heavy loss in their late Spring Exhibition. Various circumstances, among which may be mentioned the horse disease, the inclemency of the weather, and the general depression of business, may be assigned as causes for the apathy exhibited by the general public.

It is, however, very apparent that but little interest is taken in the arduous efforts of this Society to foster taste, supply information, discuss matters pertaining to Horticulture, encourage the culture of useful and ornamental trees and shrubs, and introduce such plants as are desirable for our peculiar climate.

Our Art Association, our Mechanics' Institute, our Academy of Sciences, are each well sustained. Then why, also, should not the Horticultural Society receive like support? Certainly it is of the greatest importance to California, that the horticultural and floral as well as the agricultural resources of our State should be fully developed, both for profit, for comfort, and for ornament.

Since the unfortunate result to the Society of the Spring Fair has become more generally known, a feeling of kindly sympathy has arisen, accompanied with a general expression that the Society should be sustained. In order to avail ourselves of this increased

interest in the welfare of this Society, and to place the institution on a better basis, the Trustees have considered it expedient to appeal to all who feel an interest in Horticulture and Floriculture, to become members; and they hope that at least three hundred life-members may volunteer into its ranks.

E. J. Hooper, Esq., a gentleman well identified with the interests of Horticulture and Floriculture, has kindly consented to wait upon you for your consent to become a life-member of our institution. We append the following extract from the press:

THE RECENT FLORAL EXHIBITION. — We regret very much to know that the late "Floral Exhibition" in our city, and for which so much labor, time, and money has been expended, has most undoubtedly, resulted in a considerable loss to the Horticultural Society, as well as to its members.

The question now arises, why is this? We have a city of over *one hundred and seventy thousand people*, and although a very handsome place of entertainment was opened for them at a very low cost, a display of the very choicest products of the gardens and conservatories, plants of great beauty and rarity, together with the luxury of the choicest music both by day and evening for a week, yet during a greater part of the day, the hall has received but few visitors, and even in the evenings the attendance has been slim.

Have our people lost the love of flowers and music? or are they so wedded to the pursuits of business and to money-making that these higher claims upon their natures have become as it were dormant.

When we visited this "Hall of Floral Beauty," and saw so few visitors, we confess we were not only surprised but sorrowful, for it does not speak well for the tastes and the liberality of our citizens, who should give an earnest encouragement to exhibitions of this kind, for they are the *nurseries* of a higher taste in the youth of this age; and, like the "Art Union" of our city, which we are glad to know is highly prosperous, this Society and these exhibitions should be as liberally sustained, for "Art and Nature" are the *handmaids* of Science—they are the beautifiers of the earth.

REPORTS OF SOCIETIES.

AMERICAN POMOLOGICAL SOCIETY: *Fourteenth Session, and Quarter-Centennial Celebration.*—Whereas, the American Pomological Society, at its last session, accepted the invitation of the Massachusetts Horticultural Society, to hold its Quarter-Centennial Celebration and Biennial Session in the city of Boston, in 1873:

Therefore, in conformity with said acceptance, the undersigned give notice that the Fourteenth Session of this National Association will be held in the hall of the Massachusetts Horticultural Society, Tremont Street, in Boston, commencing Wednesday, September 10th, 1873, at 10 o'clock, A. M., and continue for three days.

All horticultural, pomological, agricultural, and other kindred associations, in the United States and British Provinces, are invited to send delegations, as large as they may deem expedient, and all persons interested in the cultivation of fruits are invited to be present and take seats in the Convention.

The coming session will be especially interesting, commemorating, as it will, the termination of the first quarter of a century of the existence of the Society, and it is believed will be one of the most important and useful that the Society has ever held. On this occasion there will be brought together the best cultivators and fruits of our widely extended country, when may be examined and compared the fruits, not only of the cooler climes of the North, but of the South and West, and the Pacific slope. It is therefore very desirable

that every State, Territory and Province of America should be fully and ably represented in this convention, thereby promoting the advancement of one of the great resources of our national wealth, the extension and perpetuation of the amicable and social relations which have heretofore existed among the members of the Society, and the diffusion throughout the land of our deliberations, for the benefit of our constantly expanding territory.

It is therefore hoped that there will be a full attendance of delegates from all quarters of our country, thereby stimulating more extensive cultivation by the concentrated information and experience of cultivators, and aiding the Society in perfecting its Catalogue of Fruits. This will be one of the prominent subjects which will come before the Society, and we therefore respectfully urge the various State and local committees which have not already responded to the circular of P. Barry (Chairman of the General Fruit Committee, Rochester, N. Y.), to do so, with such information and lists of fruits as may aid in determining what varieties are best adapted to their several localities.

At this session the Society will appoint the place for its next meeting, and also decide what action it will take on the invitation to participate in the International Exhibition at the Centennial Celebration of 1876, in Philadelphia, and it is respectfully requested that members come prepared to express their opinions in regard to this subject.

Arrangements will be made with hotels, and as far as possible with the various railroad companies, terminating in Boston, for a reduction of fare, and of which notice will be given in a future circular. Similar arrangements can undoubtedly be made by the various delegations with roads in their localities.

Members and delegates are requested to contribute specimens of the fruits of their respective districts, and to communicate in regard to them whatever may aid in promoting the objects of the Society and the science of American Pomology. Each contributor is requested to prepare a complete list of his collection, and to present the same with his fruits, that the report of all the varieties entered may be submitted to the meeting as early as practicable.

The Massachusetts Society for promoting Agriculture have kindly appropriated five hundred dollars, and liberal sums have been promised by other generous patrons. See premium list.

An increased interest will be given to the occasion by the Grand Exhibition of Plants and Flowers by the Massachusetts Horticultural Society, which will occur at the same time.

Packages of Fruits, with the name of the contributor, may be addressed as follows: "*American Pomological Society,*" care of E. W. Buswell, Massachusetts Horticultural Society, Boston.

All persons desirous of becoming members can remit the fee to Thomas P. James, Esq., Treasurer, Cambridge, Mass. Life Membership, twenty dollars; Biennial, four dollars.

MARSHALL P. WILDER,
Boston, Mass.

F. R. ELLIOTT, Secretary,
Cleveland, Ohio.

SPRING EXHIBITION OF THE BAY DISTRICT HORTICULTURAL SOCIETY.—The first annual Spring Exhibition of our Horticultural Society opened on Wednesday, May 8th, at Horticultural Hall.

At 3 o'clock P.M., punctually, Dr. A. Kellogg, the worthy President of the

Society, introduced the orator of the day, Dr. E. S. Carr, Professor of Agriculture of the State University, who delivered the opening address. The Professor, in his usual style, gave a very interesting sketch of the history of Horticulture; reviewing its progress from the earliest period of ancient times to the present day; and he succeeded well in his efforts to enlighten his hearers, and to encourage their praiseworthy endeavors to advance the progress of Horticulture.

Professor Carr spoke from his manuscript for fifty minutes. His address had no immediate reference to the Exhibition; it did not criticise the productions displayed in the hall; but it reviewed the history of Horticulture from the birth of civilization in India to the present day. The Professor adverted to gardening among the Hindoos, the Assyrians, the Hebrews, the Egyptians, the Greeks, Romans, Chinese, and the Aztecs; and then he spoke of gardening in modern Europe and modern America. He remarked that what France can afford to do at Versailles and Fontainebleau, and England at Kew Gardens, we can afford to do in California. Our people were beginning to realize the benefit of public gardens to health and morals. What we need more than anything else, is the general diffusion of a knowledge of the subjects relating to Horticulture, among the whole people. Botany ought to be one of the daily studies in all our common schools. Our city parks should be so planted as to furnish these schools with essential objects of instruction, and every country school-house ought to have its shrubbery and its garden. Crowning and completing this, our State should possess, either connected with its Capitol, or University, or both, a botanic garden and arboretum, in which specimens of every plant adapted to this clime might be found. We had excellent models at Kew Gardens, and the Garden of Plants, at Paris, both of which, besides being of inestimable value to science, are good examples of scientific gardening. Both had grown up from humble beginnings to be the pride of their respective nations. The features of these gardens the Professor now described; and he remarked, that at Kew are to be found more of the refinements of horticultural art than in any place in the whole world. He feared it would be a long time before we have in California such a collection of our noble coniferous trees and shrubs as was exhibited in the arboretum at Kew, not to speak of the Indian, Chinese, Japanese, South American, and Australian Flora, so ably represented under glass and in the open ground. But that we have made some beginning in the right way, there were abundant evidences before them. The Horticultural Society had, he doubted not, a noble and useful career before it. Such exhibitions as the present were of immense value, from the stimulus that they gave to public and private undertakings; and ranked, perhaps, higher than public gardens in usefulness, inasmuch as they diffused so much information through their published proceedings. This had been the case with the Royal Society of England, and in our own country the Massachusetts Horticultural Society had attained a high rank. We should probably never see in America such an arboretum and flower-palace as at Chatsworth, or such a fifty-acre flower-garden as that of Drumlanrigg, the result of private enterprise; but we should see them, he trusted, in our co-operative parlors and gardens, and in the grounds of our State institutions, or we should be found wanting in one of the most

vital and significant marks of a high civilization: and he trusted that the time was not far distant when the possibilities of this coast in Horticulture, Floriculture, and Agriculture, would be realized on the University grounds at Berkeley. Every state in Europe had noble collections of useful and ornamental plants—had them even in their colonies, as the French at Martinique, and the English at Melbourne, in Victoria, and Sydney, in New South Wales. Even Brazil sets us an example worthy of imitation.

The Professor was heartily applauded at the close of his address.

Dr. Kellogg then announced the Exhibition open to the public, and all present availed themselves of the opportunity to examine the various collections.

The hall presented a very gay and festive appearance, and nothing seems to have been neglected to make the Exhibition a perfect success. The decorations were very appropriate and complete; the music all that could be desired. Everyone conceded that the enterprise deserved a fair appreciation from the public, and a financial success.

The plants in general were far superior to those exhibited on former occasions, and this fact alone gave the most favorable indication of progress. The better cultivation, better selections, and a better arrangement of the various groups, did not escape the notice of the visitors.

To give a full description of all the details would take up too much space in these columns, and as most of our readers undoubtedly visited the Exhibition themselves, we shall confine ourselves to the leading features.

In all 138 entries were made, each entry representing a collection. The principal exhibitors were E. L. Reimer, F. Lüdemann & Co., Miller & Sievers, E. Meyer, and R. B. Woodward.

The most meritorious groups may be summed up as follows:

Flowering Plants in Bloom, of which three collections were entered. The collection of Mr. E. Meyer obtained the first prize.

Of *Evergreens indigenous to Australia*, two collections were offered. The collection of Mr. E. L. Reimer was really meritorious, containing over 100 different species, well cultivated; he obtained the first prize.

Of *Coniferous Trees*, two entries were made. Mr. Reimer received the first prize.

Conservatory and Greenhouse Plants were well represented; three collections were entered. The first prize was awarded to Mr. E. Meyer; but we think that the decision of the judges on this point may be criticised, as also in various others. It would have been more satisfactory to the exhibitors and the public, had the report of the judges been accompanied by explanations, assigning reasons for their decision. However, more of this at some other time.

Bedding Plants were shown in two collections, and F. Lüdemann & Co. obtained the first prize.

Hardy Ornamental Foliage Plants were represented in two collections. We noticed in these groups a very remarkable improvement. Many really excellent and valuable specimens were shown. The collection of Mr. Reimer obtained the first prize.

Tender Ornamental Foliage Plants always form one of the most attractive features of floral exhibitions. Three collections were shown, and, as usual, it was a foregone conclusion that Mr. Woodward deserved the first prize, which was awarded to him. The sec-

ond prize was adjudged to Miller & Sievers.

Tropical Plants were fairly represented in the group arranged by Mr. Brown of Woodward's Gardens. He very deservedly obtained the first prize without any competition.

Climbing Plants were well represented by three different exhibitors. The collections were extensive, and made a good showing throughout. In our opinion the various collections were equally meritorious; however, the first prize was adjudged to E. Meyer.

New and Rare Plants were shown in four different collections. We can not uphold the rulings of the judges on this point. The exhibits were all more or less meritorious.

Of *Plants adapted for Hanging Baskets and Rock-work*, the collection of F. Lüdemann & Co. was awarded the first prize, and well deserved it.

The *Exhibit of Ferns* made a grand showing, and formed one of the leading features of the Exhibition. There was only one general collection entered, by Miller & Sievers, numbering over fifty species, all in fine condition. The first prize was awarded to them.

Mr. Woodward entered *Twelve Specimen Ferns*, which represented some excellent varieties, but did not come up to the standard of specimen Ferns; although they deserved the prize for which they competed.

Miller & Sievers exhibited *Five Specimen Ferns*, which were the best plants ever shown here.

Of *Ornamental Grasses*, the same firm had a good collection, for which they received the first prize.

Roses in Bloom are always most desirable features in an exhibition. Three collections were entered, the best of which was shown by Mr. E. L. Reimer. The judges gave him the third prize, declining to give the first or second, for which act we can not assign any sufficient reason. A general opinion prevailed, that Mr. Reimer was entitled to the first prize. His roses were well-grown, in healthy condition, and free from mildew, which has of late affected nearly all the Roses in this neighborhood. His collection comprised forty-three excellent and popular varieties, all in perfect bloom.

For *Cinerarias*, the first prize was awarded to Mr. E. Meyer.

For *Coleus*, F. Lüdemann & Co. obtained the first prize.

The same firm received the first prize for *Fuchsias*.

The first prize for *Double Geraniums*, and also for *Variegated Leaf Geraniums*, was given to Mr. Reimer.

Flowering Begonias were exhibited by Miller & Sievers, and obtained the first prize.

The following additional prizes were awarded:

For *Variegated Leaf Begonias*, first prize to Mr. Woodward.

For *Auriculas and Primulas*, first prize to Miller & Sievers.

For *Pansies*, first prize to F. Lüdemann & Co.

For *Verbenas*, first prize to Miller & Sievers.

For *Pinks*, first prize to E. Meyer.

For *Petunias*, second prize to Miller & Sievers.

For *Camellias* in bloom, second prize to E. Meyer.

For *Best-grown Plants, in ten varieties*, first prize to E. L. Reimer.

For *Plants indigenous to California*, first prize to Miller & Sievers.

For *Rustic Hanging Baskets* — First prize to Miller & Sievers. The same firm obtained the first prizes on *Wire Hanging Baskets*, *Rustic Flower Stand*, *Wire Flower Stand*, and *Round Fern-case*.

The exhibit of *Coniferæ Cones*, by Mr. C. Stephens, was the most complete ever shown here, and was awarded the first prize.

Mr. E. Meyer received the first prize on his beautiful *Square Fern-case.*

The exhibit of *Cut Flowers* was not so general as might have been expected. We understand that some of our florists were deterred from exhibiting on account of pressure of business. This may be so. We know a much better display could have been made. The most meritorious general collection of Cut Flowers was placed on exhibition by Messrs. Lüdemann & Co., who received the first prize.

The *Cut Roses* of Mr. Reimer were really beautiful, and worthy of close examination. He deserved and obtained the first prize.

The *Cut Pansies* of Messrs. Lüdemann & Co. were exquisite, and could not have been better; they were awarded the first prize.

The *Cut Pinks* of Miller & Sievers were excellent, and were rewarded by the first prize.

The judges on Plants, Cut Flowers, and miscellaneous articles, were: Mr. Ed. Wolleb, an amateur and lover of flowers; Mr. Henry A. Sonntag, formerly one of the leading florists of this city; and Mr. Nicholson, a well-known florist and nurseryman of Oakland.

The *Bouquet Show* took place on Monday, May 12th, and was, contrary to our expectations, meagre. We were sorry to see that so little interest was manifested in this particular branch of floral exhibition, when it is a well-known fact that our San Francisco people can well appreciate a good floral ornament in the shape of a bouquet, basket, etc.

The three principal exhibitors were E. Meyer, Miller & Sievers, and E. L. Reimer.

Mr. Meyer received the first prize on his *Round Bouquets* and *Wedding Bouquets.*

Miller & Sievers were awarded the first prizes on their *Basket of Flowers, Funeral Wreath, Cross*, and *Flat Bouquets.*

E. L. Reimer deserved and received the first prize on his gigantic and well-shaped *Pyramid Bouquet.*

The judges on Bouquets and Baskets were Mr. C. Schuman, Mr. C. Stephens, and Mr. A. O. Cook.

Financially, the Exhibition was a complete failure: the Society has sustained a loss of $2,000. This is a very lamentable fact, and not flattering to the taste of the people of San Francisco. We are surprised at the result, and can not understand why the attendance at the Exhibition Hall was not more numerous. Certainly there was nothing wanted to please the visitor. All who were present were delighted, and general satisfaction was expressed.

We shall at some other time have more to say in regard to this neglect of more generous support to an institution so well deserving of the good-will of our people. Something must be done to awaken more interest in Horticulture on this coast, and the sooner a strenuous effort is made by the Society to increase the list of their members to about five hundred, the better it will be for all concerned.

We venture to say, however, that the Exhibition would have yielded more money if circumstances had been more favorable.

The postponement of the opening from May 1st to May 8th created some confusion, and unnecessarily increased the expense of advertising and other preparatory work.

The weather during the time of the Exhibition was very unpleasant and un-

favorable; so much so that many who were anxious to attend were compelled to stay at home with their families. The evenings were very cold and windy, and offered no inducement to promenade.

We hope most sincerely that the Society will be enabled speedily to overcome the effects of their loss, by appealing to the generosity of many hundreds of our wealthy citizens, who should consider it a pleasing duty to extend their support to an institution so well calculated to benefit the community and the State at large.

Cherry-Trees.—These should never be highly manured. Singular as it may seem, better results have been obtained by growing Cherry-trees in grass than by cultivating them as highly as Pears. Experienced fruit-growers in Delaware, who once began a system of manuring and treatment of Cherry-trees, found, after an experience of a few years, that the bark would burst, gum would ooze out, and many portions of the tree show an unhealthy condition. The growers immediately discontinued high feeding, and seeded the land down to grass. The trees recovered their health, and have borne beautifully since the system of grass-culture began. It is the only fruit-tree of all varieties which we can safely recommend to be treated in this way. A Delaware friend says his row of Cherry-trees, growing in grass along the fences, are the picture of health and luxuriance; while in previous years with orchard culture he could never make them successful.—*Independent.*

From the vast establishment of the wealthy, to the tulip-bed of the florist, or the potato-patch of the cottager, there is in gardening a perpetual source of recreation, instruction and practical benefit.

WOODWARD'S GARDENS.

The gardens are now in fine order, and appear to be attracting a large amount of attention from the holiday-keeping portion of the community. The conservatory and green and tropical houses are well deserving the inspection of the scientific botanist, as well as the practical gardener and amateur. *Gloxinias* and *Achimenes* are abundant, in fine condition, and great variety. *Begonias* also are very attractive; we notice a very fine plant of *Begonia odorata*, which invites attention by its handsome appearance and rich perfume. *Gloriosa superba*, *Aphelandra aurantiaca*, and *A. Herefolia*, *Franciscea eximea*, and *Ceropegia elegans* (of which this is the only specimen on this coast), are some of the most interesting plants. There is also a very handsome specimen of *Clerodendron Balfouriana* profusely in bloom; *Phelia mimosa*, or smoke plant, is curious, and there are some fine varieties of *Hibiscus*.

The *Rex* family of *Begonias*, *Caladimus*, *Euphorbia splendens*, *Russelia juncea*, *Alutelan vexiliarium*, and *Agapanthus umbellata*, are well represented. *Stephanotus floribunda* is in full bloom, as also *Cactus spathiosa*. The *Colei* family afford a magnificent contrast in their gorgeous tints. The *Fuchsias* and *Salvias* are also in great variety. *Salvia patens* (blue Salvia) exhibits an exceedingly pure and brilliant tint of that pleasing color. There are also several fine varieties of Orchids in bloom, while the splendid condition and rich assortment of this group is very gratifying, both to the amateur and professional gardener.

The Cinchona Tree is quite extensively cultivated for Peruvian bark, in Bengal. It is a native of South America, and its introduction in California is recommended.—*California Agriculturist.*

FAVORS RECEIVED.

The Overland Monthly.—By favor of John H. Carmany & Co., the June number of this always welcome magazine is at hand. This is an excellent number. The "Comstock Lode," "California Indians," and "Commercial and Monetary Interests of California," particularly interest us.

A Simple Floral Ornament.—A contributor to the *Gardeners' Magazine* says that a lady friend of his gathered a handful of the flowers of Forget-me-not, (*Myosotis palustris*), and, to preserve them as long a period as possible, they were put in a large soup-plate filled with rain-water. The flowers were placed near the window, so as to enjoy the advantages resulting from an abundance of light and air, and the water was replenished when needful. In about three weeks, white thread-like roots were emitted from the portion of the flower-stalks in the water, and they ultimately formed a thick net-work over the plate. The flowers remained quite fresh, except a few of the most advanced when gathered, and, as soon as the roots began to run in the water, the buds began to expand—to take the place of those which faded; and up to the middle of November, the bouquet—if it may be so called—was a dense mass of flowers, and a more beautiful or chaste ornament for the indoor apartment can not be imagined. — *Boston Journal of Chemistry.*

The Walnut crop is quite an item in Los Angeles County, Cal., where more attention has been bestowed upon the propagation of the Walnut than in any other part of the State. Fifty thousand pounds of this year's crop have been sold at ten cents per pound.

WORK FOR THE MONTH.

BY F. A. MILLER.

The spring of 1873 has been unusually unfavorable to all kinds of gardening, both in and out of doors. We have had no late rains, and the soil had become very dry as early as May 15th. This lack of moisture has been attended by heavy and cold winds, which prevailed during the greater part of May, retarding the development of all kinds ef vegetation, as well as the maturing of the spring crops in general.

Notwithstanding all these unfavorable circumstances, the grain fields, the vineyards, and the orchards at present promise a fair average crop; which, however, may be a disappointment to many, who, at the earlier part of the season, had every reason to expect a most abundant crop of fruits as well as of cereals. However, things in general might be much worse than they are, and therefore we see no sufficient cause for grumbling. What we consider here unfavorable weather did not deprive us of our usual abundance of Strawberries, Cherries, and other fruits and vegetables, of very fair quality; and this is a strong argument in favor of the immigration to California, which is steadily increasing.

All that California wants to make it the most prosperous land upon the globe, is a thorough system of irrigation where it is practicable. Wherever the waters of our lakes and rivers can be made available for this purpose, it should be done. Where the work is too heavy for individuals, the State and Congress should aid all legitimate and *bona fide* enterprises, which may seek to accomplish the desired object.

Vineyards and orchards should be thoroughly examined. Mildew, if permitted to spread in the vineyard, will

do much damage. An excellent remedy is an application of sulphur, wherever any traces of mildew appear. In the orchard various insects are apt to do harm, and if they can be destroyed before overrunning your trees, you may save yourself much labor and annoyance.

This is an excellent time for the propagation of all kinds of soft-wooded flowering plants, such as Geraniums, Fuchsias, Heliotropes, Pelargoniums, Petunias, Verbenas, Begonias, etc.; also for the propagation of Pinks and Carnations.

All cuttings should be well shaded during bright days. The sand in which you intend to plant your cuttings should be well saturated with water before planting, so that you may not be compelled to water soon afterward. The grand secret, in California, in the treatment of all tender seeds and cuttings, is to water sparingly. If they are placed close under glass, well shaded, and with a moderate bottom heat of fresh manure and tan, sufficient moisture will be condensed continually to make watering unnecessary, until the cuttings are rooted, or the seedlings well advanced.

California Chestnuts.—The Oakland *Transcript* gives an account of a specimen Chestnut taken from a tree growing in the foot-hills of the San Pablo Range. The Petaluma *Argus* states that in the forests in the northern part of this county and in Mendocino, there are a considerable number of Chestnut-trees, some of them being from four to six feet in diameter, and from one hundred to one hundred and fifty feet in height. If the Chestnut is indigenous to this climate, California ought not to import the nut from the East at a high figure.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

It is all very well to talk of fruits as the gift of nature; as being such exceedingly wholesome diet, and all that sort of thing. Fruits, people say, being provided for man's refreshment and health, can not possibly be injurious. But, we think, these people ought to define what they mean by the benefits to be derived from the use of fruit, what sort of fruit, and in what condition it should be when eaten. If it be the matured and perfect product of a tree or shrub, in which the saccharine element is freely evolved and distributed with plenty of good juicy matter through the pulp, which has itself lost its early tenacity—in other words if it be ripe fruit they mean — we see no objection to a liberal consumption of it. But if they call early, rather solid, and nearly green Apricots or Cherries, early green Apples and Pears, little shriveled tasteless Peaches, Water-melons almost without a particle of sweet juice in them, and Plums as hard as bullets, fit offerings at the shrine of Pomona, and suitable food for either a rustic or a civic population, then we wish, if it were in our power, to condemn these sellers of and dealers in this immature and injurious diet, to eat what they offer and recommend to a credulous and confiding public.

In fact, no kind of fruit should be gathered from the trees until it is either quite ripe—or, in some varieties, till it is in such condition, that it will attain the desirable maturity within a certain time after gathering, becoming, thereby, suitable in its wholesomeness for assimilation in the human system. If dealers are willing to sacrifice the health and well-being of their customers for sordid and "filthy lucre," the buyers them-

selves must be instructed by those best informed and most experienced in the subject, not to risk their own health, as well as that of their families, by buying this unripe and destructive trash, called fruit.

If Strawberries were not among the most beneficial fruits in the world, undoubtedly the very unripe condition in which they are at first brought to market, to collect the plenteous dimes of the wealthy, would be productive of great mischief; but there is such an inherent healthfulness in this berry, even in its immature or half-ripe condition, that the injury to the consumers of it is really very small. [Qy? Ed.] Not so, however, with other fruits. Parents should beware of the trouble and sickness they may inflict on themselves and children by their use in an unripe state.

The public taste for fruit has for ten years past, in this State, increased at a far greater ratio than the supply has increased. The idea is prevalent, and with good reason, that the use of fruit is one of the most certain conducives of health, as well as one of the greatest luxuries. No one who would like to engage judiciously in its culture, need have any fear that the market will be glutted by the time his trees may come into full bearing condition.

In the production of Strawberries, Blackberries, Melons, Grapes, Peaches, and Pears, we beat the whole world; not so much in quality, as in the quantity we produce. The amount that is sold here would appear almost incredible, and what we shall soon be able to send abroad will astonish even ourselves.

There is abundant encouragement to plant every kind of fruit except Gooseberries and Raspberries, which, at present, will warrant only a limited culture; but there are other sorts sufficient to afford a rich supply of fresh fruit for the whole season, until winter intervenes and rests the exhausted energies of Nature.

Cherries first appeared in market about the 12th of April. They came from that early producing region in and around Pleasant Valley, in Yolo County. Along the moderately elevated foot-hills the severe and late frosts in April did but little damage to vegetation and early fruit blossoms. It is in the lower grounds, where the dampness lingers longest, that the most injury ensues to the various crops and unfolding buds.

Strawberries, although rather later than usual this year, have been, and still are, abundant and cheap. The cool weather which has remained with us so long this spring, is conducive to the production of large crops of our favorite berry. Longworth's Prolific is always worthy of its name, but especially so this season. No other kind as yet is able to compete with it in hardiness, productiveness, and flavor, combined. Its irregularity of shape is but of small consideration, and its color, although not so bright as some others, is rich and tempting in appearance. The writer well remembers its origin, and first appearance in Cincinnati, in 1843. Being an hermaphrodite, it was deemed extremely valuable among so many merely staminates and pistillates, and soon rose very high in public favor.

Green Gooseberries showed themselves on the stalls on the 1st of May. What a pity it is that we can not entirely overcome the mildew in the English Gooseberry; although we hope this year to be able to record some success in its prevention by a zealous cultivator of fruits in Napa Valley.

Cherries (10th May) do not make any great display as yet, but before this report is printed, supplies will be very

liberal. This is a profitable fruit to cultivate in this climate, as we have not here the heavy and long rains which sometimes rot it in the East.

California Lemons are not abundant, but the Sicily variety has lately well made up for this. Cargoes of Tahiti Oranges keep arriving, and further shipments from Los Angeles are being continually received.

Chestnuts have disappeared entirely for the season.

The initial consignment of any large quantity of Gooseberries to our fruit market arrived about the 12th of May.

Apples and Pears nearly disappeared on the 15th of May.

Currants were seen first in market on the 18th of May.

Apricots were first offered to the public on the 19th of May.

The first California-grown Tomatoes made their appearance on the 16th of May, though in limited quantities. Egg-plants and Okra on the 20th of May.

Cure for Rheumatism.—One of the latest fashions in physic—though we are not aware that it is recognized by the faculty—is the use, by the Belgians, of the *Plectranthus fruticosus* for rheumatism. All that is required, it seems, is to grow the plant in the room inhabited by the sufferer. As the plant is so very commonly grown in cottage windows in England under the name of the Nettle Geranium (being, however, neither a nettle nor a Geranium) it might have been thought that its virtues, if it has any, would long since have been discovered here, and that rheumatism would be non-existent in English cottages enlivened by this plant. We are sceptical on the point, but really have no definite reasons for our unbelief.—*Gardener's Chronicle.*

Editorial Gleanings.

NEGLECTED PLANTS.

There are few plants of greater beauty as decorative specimens, when well cultivated, than is the *Humea elegans*, for this plant, well grown, forms one of the finest ornaments to the flower garden; its rich and unique perfume being also wafted by every breeze that blows. At the same time, if poorly cultivated, it is but a weedy, inferior plant. The *Humea elegans* is, however, easy of culture, so that there is nothing whatever to hinder it being generally cultivated in Victorian gardens. When placed upon terraces, or in groups of three or five at the termination of walks, the *Humea* gives a marked and peculiar character to ornamental grounds, and an aristocratic expression to the whole. Such plants as Liliums, Fuchsias, Hydrangeas, and Gladioli are admirably adapted as associates of the *Humea elegans*. It is a Chinese plant, and is named after Sir A. Hume. It is also a biennial, and therefore it is necessary to cultivate it thoroughly in order to bloom it the first season. In England it is frequently grown ten feet in height, and perfectly bushy, covering some eight feet in diameter at the base, and when well in bloom exactly resembling a fountain in full play, the blossoms being a lovely auburn color, moving with every breath of wind, and at the same time giving off a very agreeable and aromatic odor, at once refreshing and uncommon.

As regards the cultivation of the *Humea elegans*, it is best, in the first place, to secure a little seed, which can be sown at this season of the year in pots or boxes, the soil most suitable being a sandy loam. If a frame or greenhouse is available, so much the better, for the

pots or boxes can be placed therein. When the young plants have come up well, they should be pricked out into separate flower-pots, only one in each; and as they afterward require it, into larger size; or they may be planted out of doors where they are to permanently remain directly they have attained to nice sturdy little plants, when their growth will be very rapid. But do not crowd them too much round with other plants at first, for they require plenty of air and space, forming their roots only slowly. If they are wanted for ornamental vases, they should be gradually potted into larger pots, as they need it, until they are finally placed in the vases, for they do not like moving when once planted out in the open ground. When first planted out, a slight shading may be found necessary, such as a few boughs stuck round them, gradually inuring them to the powerful rays of the sun. If they are thus managed, they will, in some six or eight months after the seed is sown, form handsome plants, and the cultivator who grows them will never regret the time and attention devoted to them.

The sprays of blossoms cut from the plants and placed among cut flowers are great additions, particularly to nicely arranged epergnes for the drawing-room or dining table. The *Humea elegans* has so far been an almost totally neglected plant in our Victorian gardens, and we are convinced that it is chiefly from the want of knowledge of its great beauty that it has not been made a first favorite. We trust, therefore, that some of our energetic amateurs will try this elegant plant, for we are sure that, when once seen well done, it will quickly become rescued from apparent obscurity.—*Melbourne Times.*

We are apt to believe what we wish.

THE LAUGHING PLANT.

Palgrave's work on Central and Eastern Arabia furnishes something new for botanists. A plant is described under the name of Laughing Plant, the seeds of which produce effects very much like laughing gas. It grows solely in Arabia, attaining a height of only about six inches at Kaseem, while at Oman it rises to three or four feet, with wide-spreading branches, being woody and the leaves green. Its flowers, in tufts, are yellow. Two or three black seeds, much like French Beans in size and shape, are produced in a soft woolly kind of capsule. They have a sweetish taste with a slight flavor of opium. The odor from them is rather offensive, producing a sickening sensation. The essential property of this extraordinary plant is in the seed, which, pulverized and administered cautiously, soon begins to operate in a way to create astonishment. The person begins to laugh boisterously; then he dances, sings, and cuts fantastic capers of a ludicrous character. Such extravagance of manner was never witnessed from any other dosing. It is uproariously funny for about an hour. It is a common amusement to charge food with the powder for an unsuspecting individual, for the harmless enjoyment of his capering antics. When the excitement subsides, the exhausted exhibitor falls into a profound slumber. In another hour, on awakening, he is totally unconscious of what has occurred. It is a common expression that there is nothing new under the sun. Surely, to men of science this is something new, which demands the careful investigation of such extraordinary properties of a vegetable growth that exercises such potent influence over the brain. For it is morally certain that this recently discovered Laughing Plant, so extraordinary in its potent influence

on the human brain, is something new to science, demanding the attention of dispensatory makers, as well as those professors of *materia medica* who are supposed to know all that is to be known of plants, from the Cedars of Lebanon to the Hyssop that springeth out of the wall.—*American Artisan.*

REFUSE OF TANNERIES.

Wm. S. Rand, of Lewis County, Ky., writing to the *Country Gentleman*, says:

"I was interested in a large tannery, located in a barren and light, sandy, white soil, destitute of any fertilizing principles. Upon and over this abandoned surface the waste of tan-bark, hair, lime, glue, scraps, and liquor or refuse water, were carried promiscuously. After the first year, seeds and grain of all descriptions voluntarily grew. My father, residing on these premises, who is a practical horticulturist, observed this demonstration of tannery refuse, and put it to practical use over a tract of about three hundred acres, as circumstances required. In a white, tenacious clay and sand soil he used the hair and lime to raise Potatoes, both Irish and Sweet. The returns exceeded all expectation, and a comparatively worthless soil is now a rich, productive potato ground. The hair is slow to decompose, but lightens and invigorates the earth. Rotten tan-bark is destitute of many fertilizing principles, but the experiment teaches that it is sustaining to Clover, as clover-seed will germinate and keep green in tan-bark longer than in any other manure.

"Hide-scraps, scrapings, leather-shavings—all which are animal substances — decompose, by which the necessary gases are generated and imparted to the inquisitive rootlets. Especially when mixed with barn-yard manure or compost heaps, this makes a rich and valuable fertilizer, excelling most of the manufactured stuff now on the market as more productive.

"The liquid waste of tanneries contains more fertilizing principles than all others named, yet it is run off; but wherever it does penetrate and serve the soil, mark the increase.

"The refuse water of the lime-vats, with equal parts of the tan liquor, is not to be excelled as liquid manure. In addition, sprinkle it over vines and Cabbages, and wash the bark of fruit-trees with it—worms and insects will disappear. It is safe on flowers—indeed *there is no waste* of tanneries, if properly applied. My father converted a desert into a charming, useful, and profitable soil—made the wilderness a beautiful home—and the chief agency was the use of the refuse of the tannery.

"Not a vestige of the tannery building remains—the fire-fiend destroyed all—but where it stood, and where the branches leading the liquor flowed, the surface that received the waste of the tannery is rich in producing qualities, and the luxuriant growth of every seed that falls upon this once barren soil tells of the transcendent value of the tannery waste and refuse. It will restore any land to productiveness, and prove a useful and paying investment to apply it.

Blood Globules.—The number of blood globules is greater in mammifers than in birds, in the latter than in fishes. The number is almost always in an inverse ratio to the volume of the globules; the relation between number and volume is not proportional. Birds gain more by the augmentation of the volume of their blood globules than they lose by the diminution in their number.

Sheep in Vineyards.—Sheep seem to have a strong antipathy for or a love of weeds; it matters to the farmer but very little which, so that they destroy almost every pestiferous weed they find growing within their range; leaf, seed-pod, the small limbs of all weeds, large or small, are alike to them, and by them are converted more quickly than by any other practicable process into one of the most fertilizing manures known to farmers. Sheep fed with dry food, in winter, always prefer a leafy hay, full of the leaves of weeds, vines and clover, to one of long straight stalks, as of timothy or red-top, however nutritious the latter may be for larger animals. Farmers would do well to take advantage of this weed-destroying propensity in sheep, to clear their land, cultivated or uncultivated, of noxious weeds. We are not careful enough to extirpate weeds before they go to seed, and particularly in unplowed and unpastured fields. Hence, new seeds are ripened and annually are self-grown broadcast over other portions of our farms; and particularly is this the case with very many vineyard lands. Large rank weeds are often seen peering even above the Grape-vines in many places. Now there is no more effectual way of destroying the weeds, large and small, in these same vineyards, than by turning in droves of sheep immediately after the vintage; and if you have not got them of your own, borrow a flock of your neighbor who has, and turn them in. When they have destroyed every weed and bunch of wild grass, they will feast upon the drying leaves of the vines, and the smaller and weaker shoots, but with not the least injury to the vine as regards grape-producing another year, and will leave a considerable quantity of manure just where you want it.—*S. F. Rural Press.*

Is Poultry-keeping Profitable?—Upon this subject the *Western Rural* makes the following just and sensible remarks, giving some cogent reasons why poultry should be kept upon the farm, and as to the profits arising therefrom: "For several years poultry have been very profitable, eggs and chickens commanding a high price. By a little attention to their breeding and management, poultry may be made very valuable to the farmer in many ways, one of the most important being the excellent manure they make. A comfortable, frost-proof poultry-house should be constructed in such a position that the hens will have access to the orchard, for they are exceedingly useful for destroying the curculio, the apple-worm, and other hurtful insects. Plum-trees in a poultry yard generally yield an abundant crop of fruit, perfectly free from the attacks of the curculio. The best breed of fowls are always the most profitable; but even these should not be kept more than two or three years. Old hens should be got rid of, and young and vigorous pullets put in their places. The floor of the poultry-house should be covered with wood-ashes, dry muck, or old sawdust, for the purpose of absorbing the droppings of the fowls, and preventing an offensive smell. The house should be cleaned out frequently and the manure kept in a shed, or in large casks or boxes, until required for use in spring; its effect on field or garden crops is remarkable."

Tea of Great Value.—The greatest dainty that the palate of a Chinese craves is *fan chow*, the flower of tea. A *Chronicle* man had an opportunity a short time ago to sip the imperial tea bloom, the priceless beverage of Celestial extravagance. Learning that the

enterprising firm of Castle Brothers, 213 and 215 Front Street, had samples of a very rare tea, he visited the counting-room of that firm, was shown the samples, and directed to Tuck Chong & Co., Chinese wholesale merchants, for information. Tuck Chong, an urbane Chinese, received the reporter kindly, listened to his request to be shown the imperial leaf, and brought in the priceless luxury in a small and highly ornamented box of sandal-wood. The slide lid was pulled out, and six alternate layers of perfumed rice paper and silk were carefully lifted.

Beneath all this covering was a gilded, square piece of sandal-wood. This also was lifted and the tea blossom was displayed. Rolled into balls, twisted into tiny, flame-shaped rolls an inch long, twisted very small, tied in little bunches like cigarettes at one end, and whipped into shreds at the other, was the tea flower, packed into loose petals of its own kind to preserve its fragrance. "This," said Tuck Chong, "is a tea that only mandarins of highest rank ever get a chance to drink in China. It is grown on the plantation of a very rich mandarin in the province of Foo Chow, and can only be gotten from him or his agent in Pekin. There was once a law forbidding its export, but even an American can now buy and drink it. It cost $16\frac{1}{2}$ in China. My brother brought back a few pounds on his last visit to China. I have none for sale, but it could not be sold in San Francisco for less than $20 a pound."

Virtues of Borax. — It may not be generally known how very valuable borax is in various purposes of household use. We find it the very best cockroach exterminator yet discovered. One-half pound, costing but fifty cents, has completely cleared a large house formerly swarming with them, so that the appearance of one a month is quite a novelty. The various exterminating powders puffed and advertised have been found not fully effective, tending rather to make the roaches crazy than to kill. There is something peculiar, either in the smell or touch of borax, which is certain death to them. They will flee in terror from it, and never appear again where it once has been placed. It is also valuable for laundry purposes. The washerwomen of Holland and Belgium, so proverbially clean, and who get their linen so beautifully white, use refined borax instead of soda, in the proportion of a large handful of borax powder to ten gallons of water. They save soap nearly one-half. All the large washing establishments adopt the same mode. For laces, cambrics, etc., an extra quantity of powder is used; and for crinolines (requiring to be made stiff) a stronger solution is necessary. Borax, being a neutral salt, does not in the slightest degree injure the texture of linen. Its effect is to soften the hardest water, and therefore it should be kept on the toilet table. As a way of cleaning the hair nothing is better than a solution of borax in water. It leaves the scalp in a most cleanly condition, and the hair is just sufficiently stiffened to retain its place. This stiffness, however, can be readily removed, if objectionable, by washing with water.

Zinc Labels.—In nurseries and horticultural establishments generally it is necessary to attach labels to the different specimens, and when these are exposed to the weather the writing on the label becomes illegible in a few years, and if care is not taken to renew it, the inscription will be lost. These labels are commonly made of wood, and the

inscription put on with a plumbago pencil. Sheet-zinc cut into any convenient form, and attached either by a slender point cut to the label, or by a fine copper wire, is the best material for labels. A special ink for the inscription may be made by taking one part each of acetate of copper and chloride of ammonium, and half a part of lamp-black, and mix these with ten parts of water. Keep it in a glass bottle with a ground-glass stopper. Shake well before using, and write with a coarse steel pen. The writing will resist the action of the weather for years.—*Monthly Report of Department of Agriculture.*

Growing Tomatoes from Cuttings.—A correspondent of the *Western Rural* says: Sometime since, it occurred to me that Tomatoes might be grown from cuttings of the bearing vine, in the fall, and wintered in greenhouses in a bearing condition. Accordingly, I made several cuttings and potted them in four inch pots, when well rooted, and have since continued them in a bearing condition. They are now in fruit. The object in view is to have early bearing plants for spring, by the time they can go out of doors, instead of waiting for seedlings to acquire sufficient age to produce fruit.

The experiment thus far is a success. The plants are strong and thrifty, and more stocky than when grown from seed. They are disposed to branch at the axil of each leaf, and need pruning and cutting back. No plant roots easier from cuttings than the Tomato.

The Osage Orange.—The *Maclura aurantica* has become a familiar shrub in most parts of the United States, from its general use as a hedge-plant; but it is now proposed to utilize the Osage Orange for other purposes. A decoction of the wood is said to yield a beautiful and very permanent yellow dye, and this decoction, carefully evaporated, forms a bright yellow extract called aurantine, which may be used in imparting its color to fabrics. In addition to this coloring matter, the wood of the Osage Orange is rich in tannin. Experiments made in Texas represent that hides are tanned quicker with the wood of this tree than with oak bark. The seeds yield a bland, limpid oil, resembling olive-oil, and which may, in general use, be substituted for it.

Discovery in Horticulture.—On the authority of a translation from a French journal, an exchange announces the discovery, that by watering vegetables and fruit-trees with a solution of the sulphate of iron (copperas), the most astonishing results are obtained. Applied to growing Beans, they gained sixty per cent. on their ordinary size, while the flavor was much improved. Fruit-trees were greatly benefited by watering with this solution, the Pear-tree especially being improved in thriftiness of growth and productiveness. If our gardeners and fruit-growers desire to make experiments in this direction, they can be made very cheaply, as copperas can be purchased at wholesale at about three cents per pound.

We have in the *Gardeners' Chronicle* a remarkable instance of the luminosity of fungi. The spawn of some unknown species of fungus, growing on a trunk of Spruce or Larch, was found to give a perfect blaze of white light along the track where the trunk had been dragged. The light was enough to read the face of a watch, and it continued for three days.

Floral and Vegetable Essences for Perfume.—Nearly all the essences employed in perfumery are of European production; and yet, there are men in obscure places in the United States who have made modest fortunes producing these essences. It will come to pass that we shall pay more attention to such productions, when we learn that there is profit in something else besides vegetables, fruits and grains.

This is the way the manufacture of these essences is distributed in Europe: England produces Lavender and Peppermint largely. At Nismes, attention is given to Rosemary, Thyme and Lavender. Cannes extracts the essence of the Rose, the yellow Acacia, the Jasmine, and Neroli. Sicily furnishes Citron and Orange; Italy, Iris and Bergamot.

—*Rural New Yorker.*

Value of Barn-yard Manure.—The tobacco growers of the Connecticut Valley are beginning to learn the value of barn-yard manure. Instead of paying fifty cents per load, as was formerly the rate, these farmers are now glad to pay ten to twelve dollars per cord. In consequence of the demand, large quantities of stable-manure are shipped thither from the States surrounding Connecticut. If every farmer knew the worth of stable-manure, he would see that his own farm would pay him higher prices for it than could be afforded by the owner of any other farm. "A hint to the wise is sufficient."

A Simple Deodorizer.—One pound of green copperas, costing seven cents, dissolved in one quart of water, and poured down a water-closet, will effectually concentrate and destroy the foulest smells. On board ships and steamboats, about hotels and other public places, there is nothing so nice to purify the air. Simple green copperas dissolved under the bed, in anything that will hold water, will render a hospital or other place for the sick, free from unpleasant smells. For butchers' stalls, fish-markets, slaughter-houses, sinks, and wherever there are offensive putrid gasses, dissolve copperas and sprinkle it about, and in a few days the smell will pass away.—*Rural Carolinian.*

From an exhaustive annual trade review, printed in the San Francisco *Commercial Herald*, of January 17th, it appears that the Wheat-crop of California in 1872 was 25,000,000 bushels; that the Wheat and Flour exports were 7,000,000 centals; that the gold and silver yield of States and Territories was $80,000,000; that the coinage at the Branch Mint at San Francisco was $16,380,000; that the foreign import values at the port were $40,000,000, and the export value by sea $24,000,000; that the Wool clip was 25,000,000 lbs, and that the Wine product was 4,000,000 gallons.

Make your Trees Branch Low.—Train your Pear-trees for garden or field use that they will branch at a distance of one or two feet from the ground. The advantages are easily enumerated:

1. It is easy to trim.
2. It is easy to gather the fruit.
3. Falling fruit is little injured.
4. All branches being sturdy will not be strained by over-bearing or overweight of fruit.
5. Soil will be kept shady and moist.
6. The trunk will be protected from the scorching sun.
7. The tree will grow more and more beautiful.—*Horticulturist.*

SNUFF FOR GREEN FLY.—Gardeners who have tried snuff to kill the green fly, or aphis, on house-plants, say that it works well if properly applied. The plants should either be dipped in water or thoroughly wetted in some other manner, then the snuff may be blown upon the plants through a pipe-tube, sulphur-bellows, or in any way to have it reach every portion of the stems and leaves. Of course, the snuff must be very dry, and the following day wash it off with a syringe, or by again dipping the plants.—*Rural New Yorker.*

ROSES IN ENGLAND.—An English journal says: Few persons are aware of the magnitude to which the Rose may be grown, or the splendid effect it can be made to produce on a lawn or pleasure-ground; yet with a sufficiently strong stem, and a system of careful and patient training, there can be no reasonable doubt but that the standard Roses can be grown to the size and form of the Weeping Ash, having the branches all produced from the top of a single stem, and flowing downward upon all sides—a very ornamental object for the lawn.

APHIDES OR GREEN FLY.—To destroy these pests, boil an ounce of quassia for ten minutes in one quart of water; then add soft or whale-oil soap, about the quantity of a small hen's egg, apply this to the infested plants, and the destruction of the Aphides will be certain. It will not injure the plants.

At a local meeting in New England, one speaker said he considered the value of his farm enhanced $1,000, in consequence of the attractiveness given to it by *five Elm-trees*, planted along the roadside by his grandfather 85 years ago.

The *Food Journal* draws attention to the wasteful system of peeling potatoes before cooking. In most cases they cook better in their "jackets." The skins are much more easily removed after cooking, and where the consumption is considerable the saving would be worth regarding.

It may be profitable to those having turkeys in their yard, to know that pulverized charcoal mixed with meal and potatoes, will fatten those birds in a wonderfully short space of time.—*Southern Agriculturist.*

Ten cubic yards of meadow hay weigh a ton. When hay is taken out of an old stack, eight or nine yards make a ton. Eleven or twelve cubic yards of clover, when dried, weigh a ton.

METEOROLOGICAL RECORD,

FOR THE MONTH, APRIL 28TH TO MAY 28TH, 1873.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Chronometer and Instrument-maker, Battery Street, opposite the Custom-house.)

BAROMETER.

Mean height at 9 A.M.	30.06 in.
do 12 M.	30.06
do 3 P.M.	30.05
do 6 P.M.	30.04
Greatest height, on April 29th at 9 A.M.	30.26
Least height, on May 16th at 6 P.M.	29.93

THERMOMETER.

(*In the shade and free from reflected heat.*)

Mean height at 9 A.M.	56°
do 12 M.	61°
do 3 P.M.	61°
do 6 P.M.	57°
Greatest height, on the 7th at 12 M.	72°
Least height, on the 14th at 9 A.M.	51°

SELF-REGISTERING THERMOMETER.

Mean height during the night	40°
Greatest height, on night of 8th	44°
Least height, on night of 21st	36°

WINDS.

North and North-west on 10 days; South and South-east on 2 days; South-west on 5 days; West on 14 days.

RAIN GUAGE.

April 28th	0.09 inches.
May 14th	0.01 "
Total	0.10 inches.
Total rain of the season up to date	17.94 "

WEATHER.

Clear on 20 days; variable on 8 days; cloudy and foggy on 3 days

THE

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CULTURE OF HOUSE-PLANTS.

BY F. A. MILLER.

[Continued from page 17, January number.]

In my last, I commenced the enumeration of a list of plants calculated to do well in the house under ordinary treatment. I headed the list with the popular Chinese Primrose and the far-famed Cyclamen, and endeavored to show that many of the most desirable plants require moisture in the atmosphere as well as about their roots; that the comparatively dry air of the rooms we inhabit is not favorable to the growth of plants, and that this difficulty may be partly overcome by an occasional sprinkling or syringing of the foliage. If this can not be done in the room on account of the injury to carpets and furniture, let it be done in the porch on a pleasant day; morning is the best time. Give fresh air whenever the weather is pleasant, and during very hot days screen the plants from the direct rays of the sun, which are too powerful through glass, unless it is lightly frosted or painted.

There are many other points which should be carefully observed in the cultivation of house-plants, such as proper drainage, judicious watering, and the application of some fertilizing agent. However, I shall have occasion to speak of these matters as we proceed in the enumeration of my list of plants.

I can highly recommend the various varieties of *Begonia* for cultivation in the house; they have no superior. The foliage of some is most remarkable and brilliant, while others give a profusion of bright and graceful flowers at all seasons. There are a great number of varieties, all of which deserve a place in a collection, and every year new ones are added which generally prove to be an improvement on some of the older ones. Of flowering Begonias, the nine best are:

Begonia nitida, having flowers white and showy. This is an old and well-known variety, nevertheless very desirable and easy to cultivate; it requires a somewhat shady place, and is fond of moisture. It continually throws out young shoots from the roots, which will flower in a few weeks. This plant should not be allowed to run up higher than twelve to eighteen inches, when the shoots should be cut back to make room for the younger branches. To grow a fine specimen plant, it should be shifted into a one-size larger pot every six months. In two or three

years, the plant will have grown to such dimensions that it should be taken from the pot and divided. In doing this, it is well to shake off all the earth and plant the divided portions in four-inch pots in new soil. Almost any kind of light soil, mixed with old manure, will answer the purpose. After dividing the old root, all the old shoots should be cut down, letting the young growth remain. It is also easily propagated by cuttings.

Begonia parvifolia is another very desirable plant for its foliage as well as for its white flowers, which are smaller than those of the former, but are produced in still greater abundance during winter and summer. This variety should be grown to the height of from nine to fifteen inches, and if frequently cut back it will form a dense mass of foliage and flowers. It should be shifted into a pot one size larger at least once every year. It also grows readily from cuttings, although much slower than *nitida*.

Begonia semperflorens is a charming variety, its bright red flowers hanging in graceful masses from every branch, during every season of the year. This also is an old variety, but will always remain popular. Ordinary treatment suffices to develop its neat and elegant habit to perfection.

Begonia hybrida multiflora is very distinct from all the others; its flowers are of a delicate pink color, rather small, but produced in great profusion throughout the year. Its foliage is graceful, and its habits neat and compact. It should have a place in every collection.

Begonia Weltoniensis is the queen of all the flowering Begonias, and of recent introduction. I do not know any plant which combines more good qualities. Its foliage is really exquisite, large and richly shaded; the stems of the stock and branches are of a beautiful reddish color; its habit is compact and pleasing, and the flowers, which it produces in great abundance, are of a very delicate pinkish rose-color. It is a perfect gem, is of easy culture, propagates freely from cuttings, and is satisfied with any light and sandy soil, mixed with one-third old manure. No one should be without it; it was introduced here last year, and young plants may soon be had of our florists at moderate rates.

Begonia odorata is a great improvement on the old varieties, on account of the delightful fragrance of its large and beautiful white flowers. It is of very recent introduction, but plants may now be obtained in some of our floral establishments. Its foliage is large and of a rich dark-green color; its stem is apt to run up too high, and in order to grow it in a bushy and more compact form, it should be pinched in frequently. Every one should have it; its cultivation is not subject to any difficulties.

Begonia Boliviensis is also of recent introduction; it is remarkable for its very large and showy bell-shaped flowers of a rich scarlet color, and very graceful pendent form; it is tuberous-rooted; its habit is to grow well up; its foliage is light green, and contrasts well with other Begonias. It is a grand novelty, and very distinct from all the other varieties. During this spring it has flowered with us in great profusion, and is admired by every one. The plant should be allowed to rest during the winter-season, and be kept in a rather dry condition; it does not require large pots. But very few plants are cultivated here, as it is difficult to import it in good condition. Certainly, it is a most desirable acquisition from Bolivia, its native country.

Begonia Verschaffeltii is one of the very best; it was introduced about three years since, but is not yet cultivated to

a great extent, as it propagates rather slowly. It throws up immense flower-stalks well above its elegant foliage, to the height of two to four feet, producing a brilliant mass of flowers of pinkish color, and remains in bloom for a long time. It is one of the most effective flowering Begonias. An abundance of flower-spikes are produced in succession during spring and summer.

I shall close my list of the most desirable flowering Begonias with the

Begonia smaragdina, which, although an old variety, deserves the attention of every amateur. It blooms with us freely during the winter months, and its flowers, which are produced in the style of those of *B. Verschaffeltii*, are of much more graceful and dwarfish nature, and of a very delicate light pink color. Its foliage is most remarkable, and answers the purpose of an ornamental foliage Begonia; leaves of a light green, marbled with dark green. It is one of the easiest to cultivate, but does not seem to thrive well in the shade. It should be watered sparingly until it is ready to bloom, when water should be applied more liberally.

The collection of Begonias named and described above will give the fullest satisfaction to every one who wishes to cultivate the very best class of house-plants. They should be in every house.

[To be continued.]

KNOTS ON PLUM-TREES.—A correspondent of the American Institute Farmer's Club says that for removing knots from Plum-trees, he takes a paint-brush, dips it in spirits of turpentine, and thoroughly saturates the knot, being careful not to touch the tree except in the diseased parts. The turpentine kills the excrescence; the tree puts on healthy branches below it. He burns all branches of diseased trees removed in pruning.

FRUIT-GROWING—ALDEN PROCESS OF PRESERVATION OF FRUITS.

BY E. J. HOOPER.

The cultivation of all those kinds of hardy fruits that we have already successfully acclimatized in California, and of probably a great many more of tender, semi-tropical, and even tropical habits that may yet be adapted to our highly favored State (some of these latter have already become profitable in the warmer parts of the country), is not only an enterprise of great money value, but also very important and valuable in a social, economical, and hygienic point of view. However cheaply one country may be supplied from others with fruits, whether in their fresh and natural state, or canned, dried, or by the lately discovered Alden process (which seems to prepare them next best to the fresh or canned), it can never become a general consumer of this healthy diet, unless it is raised within its own limits, and immediately at hand. The consumption of fruit has the effect of cheapening, of course, some other articles of food, and in the careful statistics of the Northwestern Dairymen's Convention, we find that "fruit materially affected the consumption of cheese, meat, and bread." Fruit supplies a more agreeable, wholesome, and sanitary substance of food for man than some other articles. The many wild fruits, also, that have in the course of time been reclaimed from their natural condition, or improved, mark greatly advanced steps in human progress and refinement.

The advantages which California possesses over the rest of the Union for the production of such almost numberless varieties, offers the greatest encouragement to fruit-raising. In nearly all the other States the Peach is limited, the Pear has diseases, the Plum has too

many insect pests, the Cherry too often rots and is injured by insects, and Grapes are expensive in their cultivation, and are very limited in their varieties (the native only being hardy out-of-doors). The Apple is their most generally suitable fruit, and even that in many sections is very much defaced by a variety of insect enemies. Their severe winters and springs occasionally are very injurious, and too often also even destructive. But here in California, there is no limit to fruit production, and fortunately so, when the processes of its successful preservation in several ways are taken into consideration. And this affords us an opportunity to describe the new "Alden" process, which seems most opportunely to present itself at the present time as a means for the profitable disposal of our surplus fruits, particularly when they are raised at an inconvenient distance from the markets. This method of drying fruits and vegetables has been lately introduced into California at the village of San Lorenzo, Alameda County. The principle of desiccation is quite rapid, and fermentation is obviated by its being operated at a high temperature; the surrounding atmosphere must be moist. The fruit is placed on shelves or trays of gauze in an apartment whose temperature is not more than 210 deg., nor less than 160 deg. at the bottom, and 110 deg. at the top. The trays are gradually raised twenty or thirty feet in this chamber, and, within about seven hours after they have step by step reached the top, they are ready to be taken out. This reduces them about seventy per cent. in weight, and they are ready for sale.

The dampness maintained in the chimney or chamber produces an excellent effect on the fruit, it being far superior to that which is commonly dried in kilns or in the sun, and it sells more readily. This operation has been most successfully adopted in many places in the East, and is coming into general use there.

The plan of preservation does not cause the fruits to shrink as in the common processes, and when soaked in water, they come out into their original size, taste, and colors. It costs but half a cent per pound for the green fruit, and if this process is adopted here it will afford us as great and even greater advantages than any other fruit district in the world enjoys, when our wonderful resources and means for the production of so many various fruits which are adapted to our soil and climate are considered. The Alden fruit occupies only one-fifth of the weight of the fresh fruit, and can be sent to market at only one-fifth of the cost. It will keep for years, and will enable fruit-farmers at great distances from the markets, to send their fruit thus preserved, at times best suited to their convenience. We shall at any rate, very shortly see what success attends the San Lorenzo establishment, and our fruit-cultivators will doubtless be guided accordingly.

When these arts of preserving fruits, which are now in their infancy, shall become general, and so perfect that our surplus crops can be utilized, the extent to which fruits and vegetables will be consumed will be on a scale surpassing all present conception. The anticipation that the market for abundantly producing kinds like ours will be overstocked, must be met by ascertaining the districts and countries most needing them.

Probably, as in the introduction of most improvements in every science, there will not be wanting parties who will raise the cry of humbug, and utter doleful preachments against patronizing novelties; but in this Alden process we

have an almost certain guarantee (from its success in the East) that with all our superior advantages in California for the purposes required, we are likely to witness something extraordinary in its effects in an economical, as well as pecuniary aspect.

It would seem that in nothing do we more need to learn than in the proper handling and marketing of our fruits. Thousands of bushels of Grapes, Apricots, Pears, Apples, Peaches, and Plums, etc., are annually most wastefully fed to stock, or allowed to rot on the ground. Many more thousands have been shaken from the trees, tumbled into bags, barrels, or wooden boxes, and trotted over rough roads until their market value was reduced to barely the cost of this rough handling, and the owners are now doubtingly considering the question, Will fruit-growing pay? Well, this Alden affair, it is to be hoped, if a paying result is reached and made publicly known, will help to effect a beneficial change in our fruit interests in this State. We shall from time to time report progress with regard to it, and be able, probably, to write something more about it in our August and September numbers.

The Wheat crop of the country for last year is estimated by the Agricultural Bureau at 240,000,000 bushels more than for the preceding year, and the quality is also much better. The department estimates the Indian Corn crop of the United States to be eight per cent. above the average. The yield of Oats is estimated to be not quite two hundred and sixty-five million bushels. Barley is reported as not likely to be less, but poorer than last year, and Rye two per cent. less in quantity than last year, though generally good.

AGAPANTHUS.*

BY F. A. MILLER.

A highly valuable bulbous-rooted flowering plant, which has been cultivated very successfully by most of our florists for a number of years. The treatment of the Agapanthus is very simple; sandy loam mixed with one-fourth to one-third of old manure is an excellent soil for it. Although it is generally treated as a greenhouse plant, I have seen a profusion of flowers produced upon plants in the open air, when partly sheltered from our heavy winds. We may, therefore, consider it a hardy plant in this neighborhood and all similar climates. The principal flowering season is in the summer, yet I have seen Agapanthus here in perfect bloom in December and January. This is easily accomplished: having several plants, one may be allowed to rest (by rest, I mean that no more water should be given than is positively necessary to keep the roots from drying up, and that the plant or root during that time should occupy a cool place in any out-of-the-way corner), while the others may be forced into vigorous vegetation by a liberal supply of moisture and a warm exposure. If plants are cultivated in the open air, they will naturally flower during the early summer, which is our most favorable season.

The variety cultivated here is the *A. umbellatus*, undoubtedly the most desirable. Its flowers are of good size, and are produced in great numbers, upon a stalk from two to three feet high. Its foliage is also very decorative and generally admired.

It is propagated by division of the roots, which operation should be performed immediately after its flowering period.

* Natural Order *Liliaceæ*.

A variety has been produced which is known as *A. multiflorus*. It is said that it yields a greater abundance of flowers, and throws up several flower-stalks during the season.

Another variety, *A. umbellatus* (fol. var.) created quite a sensation within the last few years, in Europe, with its finely variegated foliage.

Neither of these varieties has yet been introduced here, but it is to be hoped that they will soon make their appearance in our floral establishments.

I would strongly recommend the Agapanthus to our flower-loving public; its many good qualities make it a most desirable acquisition.

There is a plant growing very abundantly in our piny woods and in the Pine-forests through the South, known as the "Deer-tongue." It presents a bunch or tuft of light green tongue-shaped leaves, springing immediately from the ground, the leaves measuring from six to eight inches in length and about one inch in breadth. From the centre of this bunch of leaves starts up, as the season advances, a straight stalk, rising to the height of from two to three feet, and terminating in a collection of bright purple flowers. The leaves are very fragrant when bruised, having a strong vanilla odor.

"This little plant—a growth peculiar to the lower States—is now," says the *Mobile Register*, "attracting no little attention as an article for scenting tobacco, and wrappers for fine cigars. Even at this time it is commanding a high price in the market; and as it becomes better known, the demand for it will doubtless be greater. We are confident that the day is not far distant when it will figure as one of our most important products; and since it is climatically secured to the South, and can be grown to perfection upon our poorest Pine-lands, the freak of good fortune which brought it into notice is likely to prove a good freak to us."—*Ex.*

Water Cress.—Any farmer who has a running stream or a pond fed by living water, may at least raise enough Cress for home consumption; and near cities, or where railroad transportation is available, it may be cultivated with profit. It is an aquatic perennial; and where coming up spontaneously, or if sown, the roots once obtaining a foothold, the plant soon covers the surface of the water, and thereafter yields an abundant supply. It often brings from $3 to $5 per bushel, or $1 per peach-basketful.

When the water is shallow, all that is necessary is to drop the seed into the water in the fall, and it will usually grow without further trouble; or in the spring the roots may be planted directly, at the distance of one to two feet from each other. Cress is anti-scorbutic and exceedingly agreeable to the taste, and is truly valuable as one of our best spring salads. It is only the want of knowledge relating to the habits and cultivation of this plant, that prevents its more universal cultivation. Trout streams especially are well adapted to the cultivation of this plant, since the water for raising healthy trout must be pure, and pure water gives a peculiarly agreeable flavor to the plant.

The seed is very fine, over 100,000 being contained to the ounce. The plant is supposed to have been introduced from Europe, but has become naturalized and wild in many portions of the United States. The stem is from six to eighteen inches long, according to the depth of water in which it grows, the leaves being borne along the stems; both the leaves and stems are used for eating.—*Western Rural.*

WEEDS.

We have been favored by Professor D. C. Gilman, President of the University of California, with a copy of a "Lecture on Weeds," by Prof. Wm. H. Brewer, Botanist of the California Geological Survey, and we have found it so interesting that we have deemed it advisable to lay before our readers the following extracts from it:

"Farmers and gardeners usually apply the term, weed, to *any small plant growing where it is not wanted.* Commonly they are troublesome, some by choking out better ones, of which you all know familiar examples; some by having noxious qualities, as *Wild Onion;* some because unsightly, as *Ragweed;* some because of thorns or prickles, as the *Thistle;* some by interfering with tillage or farm operations, as *Hardhack;* some because of burs, as *Burdock;* some because of spoiling the temper, as *Purslane* is claimed to do by our Hartford friends—in short, they are *troublesome* in a variety of ways, and yet only truly troublesome when they are hard to eradicate, or rather, hard to keep down in numbers. I shall show that the actual *eradication* of weeds, although often talked of is very seldom done.

"It is usually their numbers that makes them injurious, and they multiply in a variety of ways. Some by seeds, some by roots, some by shoots, some by runners, some by all these methods, and every combination of them. Those that die after shedding their single crop of seed, mostly increase by seed, but the perennial ones in a variety of ways.

"The troublesome weeds of one locality are not those of another. I am not familiar with the comparative worthlessness or annoyances of Connecticut weeds, so I shall devote myself mostly to general facts.

"All weeds are local in their troublesomeness; those most annoying in one locality are not much of a pest in another region. To be troublesome, they must be peculiarly well fitted for both the soil and climate, and as before said, must have strong powers of multiplying. Some years ago, in a neighboring State, I made observations for several years on the numbers of seeds produced by some of the most common weeds. I found individual plants of the May weed (*Maruta Cotula*) producing 30,000 seeds, while near such luxuriant plants were others so dwarfed that they would ripen less than a dozen, so wide were its powers. When starved, it would ripen its few seeds on a very small plant, but each of these seeds, if it fell on good ground could the next year produce its thousands. The Ox-eye Daisy (*Leucanthemum vulgare*), from 100 to 10,000 from a single root. Canada Thistle (*Cirsium arvense*), from a few up to 10,000; the Pasture Thistle (*C. lanceolatum*), still more; and a roadside Mullein (*Verbascum Thapsus*) produces 600,000 seeds. I might extend this list. I merely give you these to illustrate how enormous are the powers of multiplication of some of these common pests. Then, again, with many of them the seeds have special means of being scattered. Some by the winds, some by animals, to fall everywhere, and to spring up and flourish whenever the right conditions occur.

"It is perhaps from these enormous powers of increase that the belief has so often become popular, that they were a spontaneous production, that is, originating without seeds. I have met intelligent men who believe that the Mullein, Fire-weed (*Erechthites*), and other plants would spring up where no seed had fallen, when the fact is, that these plants are so wonderfully prolific that a few plants can seed a farm. Their seeds fall everywhere, perhaps not one in a thousand ever grow. The Mullein I spoke of (and it was not an unusually large one) with its 600,000 seeds, if they were evenly distributed, and all grew, would produce a plant on every square yard of 126 acres. The fact that weeds are far more prolific than the grains they grow with, gives rise to a class of facts that is often forgotten. Many of you know that Wheat containing Chess becomes more foul each year, unless very great care is taken with the seed. The cause is, that the Chess multiplies so much faster than the Wheat. A field of Wheat, yielding

twenty-fold the seed sown, is very good; thirty-fold is very extraordinary; but a Chess-plant not yielding one hundred fold would be a very poor one. Hence its proportion increases on the Wheat, and as it is also more tenacious of life, a hard winter may kill the Wheat, when the Chess will come on and produce a crop, inducing the belief that Wheat has turned to Chess. In fact, this has been a subject of discussion—I know not how long—and men may still be found who believe in such transmutation. Yet few successful farmers now believe it; with good farmers the idea is exploded.

"With such plants, we must get rid of them by sowing clean seed *always*. Chess may be got out of a farm, as I know by experience, but it takes years of patient and vigilant warfare. And the same may be said of cockle.

"Bear in mind that the soil, climate, and cultivation regulate the troublesomeness of weeds. In one part of New York State, Wild Onions injure the pastures. In another part, where the pastures are just as good, one scarcely ever meets with a specimen. The same is true of the Snapdragon (*Linaria vulgaris*). Many of our worst weeds are importations from Europe, and what illustrates this part of my subject, is the fact that some of them are not troublesome there. It is only when they come here, on a new soil, and with a new climate, that they become so."

Plant Trees.—The question of planting trees is one that is of particular interest to California at the present time. There are but very few trees in most of our rich and fertile valleys, and through negligence or indifference on the part of the inhabitants but few, if any, have been set out even around their residences. Many localities, now considered worthless, could be made productive in a few years by studding the land with trees, and encouraging their growth for a few years by irrigation. After they have secured deep root they would require no further attention except to keep them in order. By planting trees on farms they are increased from one to a hundred fold in value; and in many instances land that is now considered worthless, can, by this means, be reclaimed to agriculture. The expense is warranted by the increased value of land covered by trees. Last spring, for example, the Michigan Southern and Lake Shore Railroad Company planted trees, fifty feet apart, along both sides of their road between White Pigeon and Toledo, 11,000 Chestnuts and 10,000 European Larches of one year's growth being used for the purpose. Great care was used in preparing the holes for the reception of the roots, the top soil being thrown in the bottom. The cost of this work was only eight cents per tree, including everything. A number of the Eastern cities are setting out trees in their streets on the *boulevard* plan, and in all quarters an interest in the tree subject is being manifested. Will Californians awaken to their own interests in this matter?—*Alta.*

Shade for Glass-Houses.—The best permanent shade for plant-houses is linseed oil and sugar of lead, in the proportion of about a teaspoonful of lead to a quart of oil; but the exact trial must be governed by the amount of shade required, which can easily be proved by trying it upon pieces of waste glass. First, wash the glass thoroughly clean, and then, on a dry, clear morning, take the oil mixture, and paint as thinly as possible over the glass with an ordinary paint-brush. By dabbing it gently with a dry brush, it will impart to it the appearance of ground glass. The shade will stand for a season, and can be removed by washing it with strong pearl-ash water.—*New Jersey Mechanic.*

THE RAIN-FALL AT SAN FRANCISCO, AND THE AGRICULTURE OF CALIFORNIA.

A recent paper read before the California Academy of Sciences on "The Probable Periodicity of Rain-fall," was illustrated by diagrams which exhibit so clearly the relative rain-fall at San Francisco that we lay them before our readers, instead of the columns of figures from which they were drawn. They also furnish us a text for a few remarks on the agricultural prospects of this State.

Figure I illustrates the relative total yearly rain-fall for each year. Figure II shows the monthly rain-fall for the same years; and the size of the black areas indicates the relative amount in each year. In this, we see the well-marked short period of comparatively little rain-fall and of clear weather during some part of our winter months, or wet season. Figure III exhibits (on a scale twice that of Fig. II) the average monthly rain-fall for twenty-three years, 1849 to 1872. In this, the short, dry period of our wet season is masked because it does not occur at any regular time. It is readily seen that no law of periodicity of rain-fall can be deduced from these observations; nor has any been deduced even in the elaborate discussion of the rain-fall of the United States by Prof. Charles A. Schott, of the Coast Survey,* nor is there any apparent secular change of the rain-fall. A knowledge of each would be valuable both scientifically and practically.

In the early life of California, her prosperity depended upon the yearly yield of gold; her prospective prosperity depends upon the rain-fall over the surface of the State. Were this as great and uniform as it is on the east of the Rocky Mountains, our future could be predicted, and little interest would be manifested upon the subject. But west of the Rocky Mountains, and especially along the Pacific sea-board, every farmer, mechanic, manufacturer, and capitalist is vitally concerned, and fully appreciates the value of water. It is the life-blood of those sections of the country not blessed with large rain-fall.

Along the northern coast the precipitation of rain is enormous; to the southward it reaches almost nothing. On the coast of Alaska the average amount is 83 inches; at the entrance to the Strait of Fuca, 123 inches; entrance to the Columbia River, 75 inches; and about 36 inches at Cape Mendocino in latitude 40½°. Thence to the southward the rainfall decreases rapidly to latitude 28° or 26°, where we find the "doldrums," with much cloudy weather and little or no rain-fall. South of the "doldrums" the seasons change, and the rains, which are generally very light, commence in June or July and end in December.

Our prosperity as a State depends not only upon the facts concerning the rain-fall as already developed, but upon our capacity to utilize them. We know that without a certain amount of rain-fall, our grain-crops must be failures; with a given number of inches fairly distributed during the season, a crop is assured. Northward of latitude 39°, we know that in a series of years the rain-fall is adequate to give large crops to ordinary industry. South of 39° on the sea-board, but especially east of the coast range of mountains, the crops are very uncertain for want of rain. With the virgin soil of our valleys and a rain-fall of twelve inches at proper intervals, on summer-fallowed land, the average

* Tables and Results of the Precipitation, in Rain and Snow, in the United States," etc. Smithsonian "Contribution to Knowledge," No. 222; May, 1872.

yield of Wheat will exceed thirty bushels to the acre; with seven inches, under similar conditions, the yield will be about fifteen bushels. This is the result of our inquiries and personal examinations of the San Joaquin and Tulare valleys this season. Last year, with a rain-fall of ten and a quarter inches about Visalia, the yield of Wheat was very large; this year, with a rain-fall of seven and a quarter inches, the crops are comparative failures.

We are thus dependent upon the rain-fall for our crops. There is not an average rain-fall throughout our great valleys south of thirty-nine degrees to give an average or certain crop, and millions of rich acres will lie idle under blue skies for want of water. We can not control the rain-fall, but we can control the water, in part, after it is fallen. The river-courses are to-day carrying to the sea millions of cubic feet of water that can be spread over our valley lands, and along the flanks of our vine-soils of the Sierra Nevada. All we need in addition to the rain-fall over the whole land, is the control of a few inches in depth of water, over the lands under cultivation, from the middle of February to the middle of March, to insure great crops of grain, grass, alfalfa, etc., and to invigorate our orchards, vineyards, and forests. To accomplish this, we need a comprehensive system of irrigation, controlling the water from the mountains and distributing it under just but inflexible rules. Such a system will demand the highest engineering skill, money, time, authority, and integrity. It must be done, or this State will remain nearly in *statu quo*.

This season we have seen tens of thousands of acres of grain irrigated since March first, standing well, with a promise of thirty-five to fifty-five bushels of Wheat per acre. On one farm of 3,000 acres the crop was given up as an absolute failure near the end of February, but by energetic efforts irrigation water was got on to it soon after the first of March, and with only one flooding it was saved to yield probably fifty bushels per acre. The irrigation water cost one dollar and a quarter per acre. We could enumerate many other similar though less marked cases.

So far as we can learn, the United States Board of Commissioners of Irrigation for the Sacramento, San Joaquin, and Tulare Valleys have satisfied themselves that the rivers flowing from the Sierra Nevada can be controlled and utilized to spread their vitalizing power over millions of acres of land, that to-day are barren, and for want of sufficient rain-fall must otherwise remain so.

The land of those valleys is peculiarly adapted for irrigation; there is no known equal area on the globe with a more even surface and gentle, regular slopes than the great basin between the Sierra Nevada and the Coast Range. Every inch of water over that basin is worth millions of gold dollars to this coast. It can be made to support millions of people, and that fact carries other marvelous results with it in the development of commerce and the useful arts.

American Steam-Plows.—We do not know of any successful American steam-plow. The English system of stationary engines on each side of the field is, so far, the only practical mode of plowing by steam. American inventors have sought to accomplish steam-plowing by the aid of a traction engine. It remains to be shown that it is either economical or practical.—*N. Y. World.*

SHELLAC.

The uses of Shellac in this country have, within a few years past, increased wonderfully, and the consumption for all purposes is very large. The chief use of this substance is in the manufacture of the various kinds of varnish, for which it is admirably adapted, and is preferred to almost any other material. Large quantities are also used in the manufacture of sealing-wax, of which it forms the chief ingredient. Besides these chief uses, Shellac enters quite largely into all kinds of sizing matter, particularly that used by the hatters for stiffening bodies of hats.

The best specimens of this article are brought from Siam, and the next to this is reckoned that from Assam. That from Bengal is deemed inferior. It is said that the capacity of those regions to keep up the supply far exceeds any possible demand, and this may be more readily understood when it is considered that these localities furnish the supply for all the markets of the world.

Though Shellac is very well known in connection with the uses to which it is put, it is not generally known what it really is. It is a resinous substance, which was once supposed to be deposited by an insect on the twigs and branches of various species of the Fig or Banyan tree in the East Indies. It is, however, rather the product of the tree itself, exuding at the sting of the insect.

These insects resemble somewhat the cochineal insects of Central America, and at certain seasons of the year fly about in immense swarms, puncturing the tender branches of the tree, from which flows a milky juice. This juice hardening forms a crust about the twigs, which are then broken from the tree, and form what is known to commerce as stick-lac. When this stick-lac is broken up and its coloring matter removed by warm water, it assumes the form of a small grain, and hence is called seed-lac. It is sometimes melted into cakes, and is then called lump-lac. But more commonly it is prepared for market by putting the seed-lac into fine linen bags and slowly heating them, and then straining and wringing out the material upon a smooth surface of wood. Purified in this form it is known as Shellac. It is soluble in alcohol, and melts readily at a moderate heat.

The coloring matter of Shellac, which owes its origin to the insect, is readily washed out with warm water. The material thus obtained yields a bright red powder not unlike carmine. This dye is yet used by the natives for coloring crimson, and the crimsons of the ancients are supposed to have been obtained from this source. The dyers of Brussels and Holland, whose red colors have always been remarkable for their durability, use this material. Before the discovery of cochineal this lac coloring-matter was in universal demand, but now that other red dyes have been discovered, its use is considerably diminished.

Arranging Flowers in Beds.—In arranging flowers in beds, the principal things to be avoided are: The placing of rose-colored or red flowers next to scarlet or orange, or orange next to yellow, blue next to violet, or rose next to violet. On the contrary, the following colors harmonize: white will relieve any color (but should not be placed next to yellow), orange with light blue, yellow with violet, dark blue with orange-yellow, white with pink or rose, and lilac with yellow. By observing these rules the amateur may have his flower-borders vie in beauty and arrangement

with those of greater pretensions, and even surpass many of them. Nothing adds more to beautify home than a well arranged flower-bed of rare flowers.—*Southern Agriculturist.*

REMARKS ON THE NUDIBRANCHIATE, OR NAKED-GILLED, MOLLUSKS.

BY R. E. C. STEARNS.

In the true Gasteropodons (Greek—*gaster*, belly, *podes*, feet), or belly-footed mollusks, we find two great Orders: the Branchifera (from the Latin words *branchiæ*, gills, and *fero*, to bear), or Gillbearers; and the Pulmonifera (from the Latin *pulmo*, lung, and *fero*, to bear), or Lungbearers—the latter respiring by pulmonary sacs.

Besides this striking difference in structure, the branchiferous Gasteropods pass through a distinct larval stage, and come from the egg in a very different form from that which they present when mature or in the adult stage.

The pulmoniferous mollusks undergo no such metamorphosis.

The *Branchifera* are divided into two sub-orders according to the position of the gills, and the sub-orders are again divided into groups.

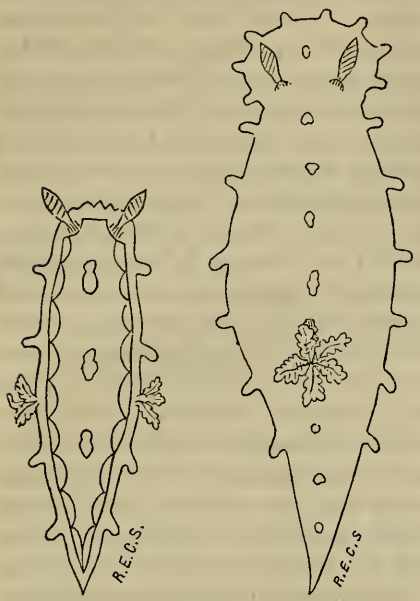
One of these sub-orders is called the *Opisthobranchiata* (from the Greek word *opisthos*, behind, and *branchiæ*, gills), and it is this group to which I refer herein. The second great group of the sub-order *Opisthobranchiata* is the *Nudibranchiata*, or naked-gilled crawlers. The animals, as would be inferred from the name of the group, are destitute of shells, except during the embryonic period, when these delicately constructed creatures are furnished with a small glassy spiral shell, and can swim in the water freely; but as they advance in age the form of the body is modified, and the shell falls off. In the matter of sexual development, they are hermaphrodite; they are also carnivorous in their food, which consists principally of zoöphytes.

The Nudibranchiates are divided into three principal families: the *Æolidæ*, which have the gills along each side of the back; the *Tritonidæ*, which resemble *Æolidæ* somewhat in form and position of the gills, but present other structural differences, which warrant their separation as a family; and the *Doridæ*, generally of broader form and larger size than the two preceding families, as well as of tougher substance, which have the gills placed in a circle on the back and generally in the hinder part of the body. The gills or branchial plumes are of very elegant forms, and frequently present the appearance of Fern-leaves, or similar graceful and feathery shapes; the foot (or belly) is much smaller than the mantle (or back, as seen from above).

The first two families contain species frequently remarkably elaborate in the development of the tentacular processes upon the back and sides, often of most brilliant and varied coloration, while the substance of their bodies is but a trifling degree harder than that of the jelly-fishes; the various tissues of the body being so transparent and delicate that the beating of the heart and the digestive processes are discernible.

These remarkable creatures, many of them of marvelous beauty, are found in all parts of the oceanic waters, from the Arctic to the Equatorial seas; probably thousands of species exist as yet undescribed. As but few of the naked-gilled mollusks are of a substance sufficiently solid to admit of preservation in alcohol, they are seldom seen in collections. They may be detected at lowest

water-mark on the under side of rocks, appearing to the uneducated observer as nothing more than a highly colored bit of mucus or slime, for the reason that being exceedingly timid, when disturbed they draw their bodies into an almost shapeless lump.



1 2

NUDIBRANCHIATE MOLLUSKS.

Figures 1 and 2 represent two species of California Nudibranchiate (or naked-gilled) Mollusks, magnified, being twice as long and twice as wide as the living specimens were from which the drawings were made; both belonging to the group of *Triopa*. The first (Fig. 1) is *Lateribranchœia festiva*, so named because the branchæa or gills are on the side of the body and opposite each other; the body is of a transparent cream color, and the festooned or looped lines on the back are of an opaque chalky whiteness, while the substance of the bodies in both of the forms figured is nearly as soft as jelly.

The largest of the two figures is *Triopa Carpenteri*, named for Dr. P. P. Carpenter, a distinguished naturalist, well known among scientific men for his laborious and thorough investigations in the natural history of the west coast of North America. This animal is exceedingly pretty when alive and examined with a magnifier; the upper part of the club-shaped tentacles near the head, and the edges of the gill-plumes which resemble delicate fern-leaves, as well as the ends of the short projecting processes around the edge of the body, are tipped with a brilliant orange, and the body, which is of a translucent whiteness, is covered with fine pimples (*papillæ*) of orange. Both *L. festiva* and *T. Carpenteri* were found on the under side of large granite bowlders near the light-house at Point Pinos, Monterey. When visiting the sea-shore, it will well repay the trouble to turn over some of the bowlders, for Nature hides many such beautiful forms as are above described, in just such out-of-the-way places.

California Chestnuts. — At a late meeting of the California Academy of Natural Sciences, Dr. Kellogg said he had just returned from under the shadow of the finest evergreens ever grown. He hoped the Secretary would record the fact that there were in California true Chestnut-trees (*Castana chrysophylla*) from one hundred to two hundred feet high, four to six feet in diameter, and with a clean trunk of from fifty to seventy feet. This fact had hitherto been doubted, although he had stated it before the Academy several times. He had on the trip also met with *Rhus aromatica*. A new plant, described by him, was an *Hibiscus* or kind of wild Hollyhock, having a strong fibre similar to the Ramie; the first ever collected in this State.

THE CULTIVATION OF MUSHROOMS.

BY T. V. MC'EVOY.

The cultivation of Mushrooms is a process in gardening perhaps the most singular and curious of any. In the cultivation of other vegetables, we either sow or plant something material — slip, root, or seed, which we can see and feel; but in the cultivation of the Mushroom, we neither sow nor plant anything visible, at least to the naked eye. Yet it is certain that Mushrooms are produced by germs or seeds which naturally vegetate in the fields at certain seasons, and which may be made to vegetate artificially at any season by a certain process, and by using a proper composition. There is no rule for the time of making Mushroom beds, as it may be done with propriety at any season of the year; nor is light necessary for the production, as Mushrooms may be as successfully raised in a cellar as anywhere else, provided it is not too damp. The only precaution necessary, is to have the beds where you can regulate the moisture.

If you can obtain Mushroom-spawn, and make a bed of moderately fermented stable-manure, about three feet deep, spawn it over when strong heat has subsided, and cover it over with light earth, you can obtain Mushrooms sooner than by the way I am about to describe. But as Mushroom-spawn is not always to be obtained, particularly in San Francisco, I would recommend instead the following method: Make a frame of ordinary boards about twenty inches deep, four to six feet wide, and of any convenient length from ten to twenty feet; and if you can not place it in a situation already covered, you must put a roof over it, so as to prevent it from getting too wet when the winter rains come. If there be no natural drainage under the bed, make a floor of ashes, brickbats, chips, or gravel, so as to keep the bed quite dry and free from underdamp. Now, lay a course of horse-droppings six inches thick. These should be fresh from the stable; they must not be broken, and the drier the better. Collect them daily until the whole bed or floor is covered to the above thickness, and see that they do not heat or ferment. When this course is quite dry, and judged to be past a state of fermentation, cover it with two inches of light, dry, sandy earth. Now, lay another course of droppings, and earth them over as before, when past a state of fermentation; then, a third course, which in like manner earth over. This finishes the bed, which will be a very strong and productive one if properly managed afterward. In forming the bed it should be a little rounded, in order that the centre may not be more moist than the sides; if it be made up against a wall in a cellar, shed, or stable, it may have a slope of a few inches from the back to the front, less or more, according to its breadth. As soon as the bed begins to run, water it. In order to find out this, thrust your hand a few inches deep in different parts of the bed, and examine what you bring up. It ought to smell exactly of Mushrooms, and look like little bits of thread. But generally you will be forewarned of the spawn's running by a previous crop of spurious fungi. These fungi are generally what are called pipes or balls — sometimes a kind of Mushroom of a very bad sort, thin, flat, with white or pale yellow gills. They have all, however, a nauseous, sickly smell, and may be readily distinguished from the true Mushroom, which is thick, hemispheric, with brown or reddish gills.

When by this means you have ascertained that the spawn is fully formed,

water the bed two or three times well, in order to set it growing; for without moisture it will remain dormant, and show no symptoms of vegetation. Give just sufficient water to wet the bed through, and afterward keep the bed in a medium state—a little inclined to be dry.

When your bed gets tired of producing, cease watering for a few months. Then, if you examine as directed before, you will find a new net of spawn on the top, the threads being deep-rooted almost to the bottom. By a hearty watering as at first, a plentiful and lasting supply may be obtained.

In gathering Mushrooms, they should be always *cut*, so as not to disturb the young ones which are forming.

New Use for Flax-Seed.—An English paper contains a statement which would seem to open the door for a new use for the product of Flax-seed, and is of value to the western farmer as tending to enhance the value of this seed, as one of the products of the farm.

The new use is in the manufacture of an article called lineolum, deriving the name from *linum* and *œum*. It is said that it will be a rival to caoutchouc, or as is commonly called, India-rubber. The new article is manufactured of linseed oil by oxidizing it until it is solidified into a resinous substance, as we frequently find it when it has been exposed to the atmosphere. It is stated that "in this state it is combined with resinous gums and other ingredients, whereupon it assumes the appearance and most of the properties of India-rubber. Like India-rubber, it can be dissolved into a cement and used in the manufacture of the material for water-proof clothing. It can be used as a varnish for the protection of iron or wood, or for coating ships' bottoms. It is as good as common cement, having the properties similar to marine glue made from India-rubber and shellac. It is easily vulcanized by exposure to heat, and by this means becomes as hard as the hardest wood, and capable of the finest polish. The great variety of uses to which it can be applied in this form will at once suggest themselves to the reader. The manufacture of lineolum has thus far been made to produce floor-cloth, for which it has proved itself well adapted. Combined with ground cork, it is spread on a stout canvas, the back of which is afterward water-proofed with oxidized oil. The fabric is then printed by means of blocks in the ordinary way. The floor-cloth thus produced is pliable, noiseless to walk upon, washes well, preserves its color, and rolls up like an ordinary carpet. It is very durable, and its component parts will not decompose by heat or exposure to the sun or water, as will India-rubber.—*Farmers' Club.*

Viola Perpetual Yellow.—We have grown all the Violas that have been brought before the public and recommended for bedding purposes, and consider this by far the best of the yellows that we have yet seen. When it was supplied to us it was said to bloom all the year round, and it most certainly does so. It was in bloom all winter in the cutting-bed, and all through the summer it has produced in continuous succession the most extraordinary crop of bloom of any bedding Violet, or in fact any other plant, that we have ever used for bedding; and it looks as little like exhausting its blooming power now as ever. The habit is excellent, and the color a clear and most effective yellow. Not a single plant has given way. —*London Gardener.*

AMERICAN POMOLOGICAL SOCIETY.

In our June number we presented the Address of Invitation of the American Pomological Society. We hope that our horticultural friends will for the honor of California make strenuous efforts to participate in the exhibition. We append the Premium List and Programme of Business:

PREMIUM LIST.

Five hundred dollars has been offered by the Massachusetts Society for Promoting Agriculture, and one hundred dollars each is tendered by the following gentlemen, for Premiums and the promotion of the objects of the Society, viz: Hon. Albert Fearing, President of the Hingham Agricultural Society; John Cummings, Esq., President of the Middlesex Agricultural Society; Dr. Nathan Durfee, ex-President Bristol Central Agricultural Society; William Knowlton, Esq., ex-President Worcester Agricultural Society; Charles O. Whitmore, Esq., and Gardner Brewer, Esq., of Boston. The following prizes will therefore be offered, in accordance with the above generous donations:

Apples.—For the largest and best collection of Apples, correctly named, from any State or Society, three specimens of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Apples, correctly named, grown by one individual, three specimens of each variety: 1st premium, the Society's silver medal and fifty dollars; second premium, the Society's bronze medal and twenty-five dollars.

Pears.—For the largest and best collection of Pears, correctly named, from any State or Society, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Pears, correctly named, grown by one individual, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

Grapes.—For the largest and best collection of named Native Grapes, from any State or Society, three bunches of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of named Native Grapes, grown by one individual, three bunches of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of named Grapes, grown west of the Rocky Mountains, two bunches of each variety: premium, the Society's silver medal and fifty dollars.

For the largest and best collection of Native Grapes, correctly named, grown south of the southern line of Virginia, Tennessee, Missouri, etc., two bunches of each variety: premium, the Society's silver medal and fifty dollars.

For the largest and best collection of Grapes grown under glass, two bunches of each variety: premium, the Society's silver medal and fifty dollars.

Peaches.—For the largest and best collection of Peaches, correctly named, from any State or Society, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Peaches, correctly named, grown by one individual, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

Plums.—For the largest and best collection of Plums, correctly named, from any State or Society, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Plums, correctly named, grown by one individual, three specimens of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

Seedling Fruits.—For the best collection of seedling Apples, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling Pears, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling hardy Native Grapes, either from native seeds or hybrids, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling Plums, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling Peaches, grown by one individual: premium, the Society's silver medal.

Figs.—For the best collection of fresh Figs, grown in the open air: premium, the Society's silver medal.

For the best exhibition of dried Figs, grown and cured in the United States: premium, the Society's silver medal.

Oranges.—For the best collection of Oranges, grown in the open air: premium, the Society's silver medal.

Lemons.—For the best collection of Lemons, grown in the open air: premium, the Society's silver medal.

Raisins.—For the best exhibition of Raisins, grown and cured in the United States: premium, the Society's silver medal.

Dried Fruits.—For the largest and best collection of Dried Fruits, with full description and expense of process: premium, the Society's silver medal.

Canned Fruits.—For the largest and best collection of Canned Fruits, with full description of process and expense: premium, the Society's silver medal.

Premiums are subject to the general rule of restriction, that where objects are not worthy, prizes will be withheld. No State, Society, nor individual can compete for more than one premium with the same variety or varieties of fruits.

PROGRAMME OF BUSINESS.

Hours of Meeting.—Wednesday, 10 o'clock in the morning, and 3 o'clock in the afternoon; Thursday, 9 o'clock in the morning, and 3 o'clock in the afternoon; Friday, 10 o'clock in the morning, and 3 o'clock in the afternoon.

Rules for Speaking.—Five minutes, and no person to speak more than twice on the same subject without leave.

Wednesday, 10 A.M. Introductory Exercises; Appointment of Committees, namely, on Credentials, on Nomination of Officers, on Record of Fruits exhibited, on Awards of Premiums. 3 P.M., President's Address; Reports of Committee on Credentials and on Nomination of Officers; Election of Officers; Reception of Treasurer's Report; Discussion in regard to place of holding next meeting; also, in regard to what measures the Society will take to participate in the International Exhibition of 1876, in Philadelphia; and in reference to the policy of awarding premiums by this Society.

Thursday, 9 A.M. Reports of Standing Committees; Discussion of the value of fruits enumerated in the Catalogue, as indicated by stars, to be called by the Secretary, in alphabetical order, as follows: Apples, Pears, Grapes, etc., etc. At the close of each division, statements relative to new varieties will be received.

Friday, 10 A.M. Reports of Committees on Fruits exhibited, and on Premiums; Reception of Essays; Completion of Discussion on values of fruits as per Catalogue, and introduction of names of new varieties. 3 P.M., Resolutions, etc., Adjournment.

ESSAYS.

The following persons were appointed at the last meeting, to prepare Essays, as follows, viz: Hon. W. C. Flagg, Illinois, on Diseased Apple-trees, and their Cause; Wm. Saunders, Esq., District of Columbia, on Theory and Practice of Pruning; Thomas Meehan, Esq., Pennsylvania, on Fungi on Fruit, and Fruit Diseases, as cause, result, or concomitants of one another; P. J. Berckmans, Esq., Georgia, on Cause, Remedy, or Preventative of Pear Blight.

In addition to the above, the following named gentlemen have been invited, and are expected to prepare short, condensed practical essays, or papers, as follows: Professor Louis Agassiz, of Harvard University, Massachusetts, on the Geological Age of Fruit-bearing Plants; Dr. John Strentzel, California, on the Cultivation of the Fig in the United States; Dr. E. S. Hull, Illinois,

on Root Pruning, and how to grow the fairest fruit; Mark Miller, Esq., Iowa, on Fruit Growing, and Varieties, in Iowa and other Western States; Geo. W. Campbell, Esq., Ohio, on Grapes, Culture, Varieties, etc.; C. M. Hovey, Esq., Massachusetts, on Pear Culture; P. Barry, Esq., New York, on How to grow and keep Pear-trees in vigor and shape; Robert Manning, Esq., Massachusetts, Is there a permanent decline in the Apple-tree and its crop in New England?; P. T. Quinn, Esq., New Jersey, on the Exhaustion of Fruit-trees, and the remedy therefor; Josiah Hoopes, Esq., Pennsylvania, on the Influence of the Stock on the Graft, or of the Graft on the Stock; A. S. Fuller, Esq., New Jersey, on Culture and Varieties of Small Fruits; Wm. Parry, Esq.; New Jersey, on the Cultivation and Varieties of the Apricot and Plum; W. C. Barry, Esq., New York, on the Keeping and Ripening of the Apple, Pear, and Grape; F. R. Elliott, Ohio, on the Cherry.

Trees and Rain. — The influence of trees upon rain and the general moisture of the atmosphere, which has been much discussed of late, receives a strong illustration from the island of Santa Cruz, West Indies. A friend who spent the months of February, March, and April last upon the island, informs me that when he was there twenty years ago, the island was a garden of freshness, beauty, and fertility; woods covered the hills, trees were everywhere abundant, and rains were profuse and frequent. The memory of its loveliness called him there at the beginning of the present year, when to his astonishment he found nearly one-third of the island, which is about twenty-five miles long, an utter desert. The forests and trees generally had been cut away, rainfall had ceased, and a process of desiccation beginning at one end of the island had advanced gradually and irresistibly upon the land, until for seven miles it is dried and desolate as the sea-shore. Houses and beautiful plantations have been abandoned, and the people watch the advance of desolation, unable to arrest it, but knowing almost to a certainty the time when their own habitations, their gardens and fresh fields, will become a part of the waste. The whole island seems doomed to become a desert. The inhabitants believe, and my friend confirms their opinion, that this sad result is due to the destruction of the trees upon the island some years ago.—*Popular Science Monthly.*

Sowing Tree Seeds.—We have the following facts and data from Robert Douglas, of Waukegan, Ill., relating to the seeds of timber and useful trees. Mr. Douglas sows and handles more trees than any man in America whom we know, and we give the information relating to the planting and germination, in answer to numerous inquiries.

"All the evergreens (Junipers excepted) may be sown dry, or soaked in tepid water for twenty-four hours before sowing. Juniper seeds will not germinate till the second year. As a rule in sowing, the covering of earth should be governed by the seeds; very light seeds require very light covering, and should be hand-weeded the first season. All evergreen seeds should be sown in beds and shaded either with lath frames or brush shade. Larch seeds require the same treatment as evergreen seeds.

"Apple-seeds should be soaked two or three days, Pear-seeds three to six days, after which they should be mixed with twice their bulk of earth and sand, and placed where they will keep cool and moist or frozen, until time for sowing."—*Western Rural.*

Editorial Portfolio.

We would call the attention of our readers to the valuable facts contained in the article on "The Rainfall at San Francisco and the Agriculture of California," published in this number of the Horticulturist. It is from the pen of one of our citizens best informed on the subject, and having given the matter a most thorough investigation, from a scientific as well as practical standpoint, it carries great weight with it. The vast importance of irrigation to California, and the adaptability of some sections of our rich territory to a highly remunerative system of cultivation from the position of our water-courses, should receive prompt attention at the hands of our people. The opinions expressed in the article are so fully in accord with our own views that we refrain from further comments, only hoping that some feasible plan will be speedily adopted.

We shall look for some discoveries in the domain of Botany through Dr. Kellegg's recent climb among the Yosemites—new and old—with the indefatigable geologist of that region, John Muir. It is the Doctor's first season in that locality. They were accompanied by Mrs. Prof. Carr, and Wm. Keith, the artist. In recent numbers of the *Overland Monthly*, Mr. Muir has given very graphic descriptions of that grand section of our State, and in the future issues of the Horticulturist we purpose to make extracts from these articles, of floral forms found in that locality.

In our next issue, we shall present a colored plate of "The Golden Morning-Glory (*Aniseia aurea*, Kellogg), a new flower, found by Prof. Geo. Davidson, of the Coast Survey, on his recent scientific trip to Lower California, and described by Dr. Kellogg.

Our Academy of Sciences is entering upon a new era of usefulness. It is gaining in strength every day. We are glad of it, and we thank such men as Prof. Davidson, its President, and Prof. Stearns, for the *working* interest they take in its affairs.

We acknowledge the receipt of the *Overland Monthly* for August. The following bit of word-painting we find in the article entitled, "The Great Tuolumne Cañon:"

"This little cañon is a botanical garden, with dwarf arctic-willows not two inches high at one end, bush *compositæ* and wandy half-tropical grasses at the other; the two ends only half a day apart, yet among its miniature bogs, prairies, and heathy moorlands, the botanist may find representatives of as many climates as he would in traveling from Greenland to Florida."

This magazine improves with every issue. It is a most readable periodical. J. H. Carmany & Co., Publishers.

Woodward's Garden.—The energetic and public-spirited proprietor of this pleasure resort never wearies of adding novelties, the latest being a marine aquarium—one of the most artistic and instructive additions yet made. This alone is worth a day's inspection, and certainly adds vastly to the other numerous attractions of the place.

WORK FOR THE MONTH.

BY F. A. MILLER.

The work of irrigation is now occupying a great deal of time, wherever a necessity exists for it. But very few horticulturists in the most favorable localities can do without irrigation, and it is evident that a reasonable and judicious application of water is very beneficial in most cases. Old and well-established orchards and vineyards may yield fruits that present all the good qualities which are characteristic of, and which we expect of them, without irrigation, as their roots have penetrated the soil to a depth where some moisture is always found; nevertheless I am of opinion that the application of water once or twice during the summer season will, by invigorating the trees and vines, improve the flavor, color, and size of the fruit. I have observed trees and vines, which, owing to a want of moisture, have ceased to develop new growth, and have hastened the ripening of fruit; such fruit, however, can not be healthy, nor can it satisfy any reasonable expectations. I would, therefore, insist upon irrigation wherever the necessary facilities are available. In many localities, particularly along the foothills of the Sierra and in the more northern portions of the coast, where fruits of all kinds ripen later, irrigation is more necessary, and should be attended to during the month of July, without fail. Besides supplying the required moisture, irrigation also is a good fertilizer. But the process of irrigation does not cease with the application of water. Within a day or two after irrigating, the ground should be worked with a hoe, to prevent the soil from baking and forming a hard crust, which is injurious in all cases. If you have any straw, litter, or branches close at hand, it will be well to throw some of them over the newly worked ground, in order to retain the moisture, which is apt to evaporate now more freely without this precaution.

In young orchards and vineyards irrigation is still more desirable. Frequently I have seen young trees and vines perishing from want of moisture, and if some of them do keep alive during the first or second year after transplanting, their miserable existence shows no vigor of growth. On the other hand, trees which had been irrigated two or three times during the summer months, had made a healthy and vigorous growth, promising to bear a good crop within three or four years from the time of planting. Thus, several years may be gained by irrigating judiciously.

Most of our ornamental evergreen-trees require some water during the first summer after transplanting, unless it has been done very early in the autumn, and with proper care; but even then an occasional watering, say once a month during the early summer, is highly beneficial, and advances the growth of the trees in a remarkable degree.

Pines, Cypress, Cedars—in fact, most of the coniferous trees—may be transplanted with safety in autumn, and will live without irrigation if the ground has been well prepared, and if they have been mulched; but an occasional watering helps these also mightily in making new growth. After the first year they will do without irrigation.

Although I have seen a few of the Australian Acacias grown up to large and fine trees without irrigation, I would treat them to an occasional watering once or twice during the summer; for I have seen five and six year old trees perishing for the want of moisture.

The Australian Gum-tree seems to be

able to withstand our dry summers without irrigation. During the first summer after transplanting, they should be mulched, and if two or three good waterings can be given them, it will be a great help. In all cases, trees which have been transplanted early in autumn will do best, having an opportunity to establish themselves fairly during the rainy season.

When water can be had, I would advise thoroughly irrigating all ornamental trees which have been transplanted during last winter, at least once or twice during the summer, and as the most important time when this should be done, I would name the present month of July.

Nursery stock, such as young seedlings, young grafted stock, cuttings, etc., must be irrigated, unless the soil be naturally moist. I would sooner venture to plant a tree or cutting grown by irrigation, than one that has been grown without it, unless, as said above, the soil in which it is growing, is naturally moist.

There are various ways of irrigating. Underground irrigation is undoubtedly best, wherever it is feasible, and where the necessary expense can be easily met. It is also the most economical way, as it does not require the ground to be worked over after the watering.

The seeds of some of our herbaceous spring and summer flowers now begin to ripen, and it is always a good move to save at least as much seed as you may require yourself. The seeds of Pansies, Candytuft, Larkspur, Primulas, Cinerarias, Sweet Alyssum, and early flowering Stock, may now be gathered and stored away in an airy, cool room, where mice and rats can be kept out.

If you wish to have Cinerarias in bloom, in February, March, and April next, you should sow the seed now.

This is a good time to propagate Pinks by cuttings or layering, which will make fair plants for the coming winter and spring.

While the dust is flying so abundantly during our summer months, an occasional syringing and sprinkling of all plants, in and out of doors, becomes a necessity. Plants can not thrive well if their foliage is coated with dust, which also gives them a very unsightly appearance.

The present month offers a very good opportunity for propagating Azaleas, Rhododendrons, and many other choice shrubs and plants, by cuttings. Some of our wise men say that Azaleas and Rhododendrons can not be grown here successfully from cuttings. My opinion is decidedly at variance with theirs. There is no reason why they should not do as well here as anywhere else, under proper treatment.

If Gladioli are desired in bloom next October and November, they should be planted now. There is yet time to plant Tuberoses for late flowering.

Camellias have mostly made their first growth, and buds are forming. Keep them in an airy place, and water less. If you continue to keep them in a warm place, and water them freely, they are apt to make a second growth, by which you will lose your buds.

If Mignonette is expected to flower well during next autumn and winter, the seed should be sown this or next month. Water the soil thoroughly, cover with good old manure, dig over the whole, and then sow your seed in rows or broadcast; cover up lightly with finely pulverized soil; and if any branches can be spared from some trees or shrubs, the ground may be shaded for a few days, which would help materially.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Even in this specially favorable climate for raising so many varieties of fine fruit, the demands of civilization and for the promotion of health, comfort, and longevity, call for a still greater abundance and a freer use of them, and more especially for some sorts that are as yet comparatively scarce, and are therefore too high-priced for the masses. This observation relates chiefly to the cultivation of the Cherry and the Raspberry, planting of which varieties seems to have been enterprised the latest of all the small fruits. It is the augmented use which has been progressively increasing of late years, which alone secures a continuation of profits to the fruit-grower; and the increase of our population by immigration alone offers good encouragement for people to plant fruit-trees, shrubs and plants of this character in every kind. The new processes of drying, canning, and especially the latest improvement—the Alden method—demand also that this progressive increase in production should be maintained. In the older fruit sections it is found that a year of cheap fruit is invariably followed by an increased demand for it—as a larger number of people acquire the habit of using it. In fact, to families of all ranks once fairly habituated to its use, fruit becomes a necessity. And as the demand, so the prices become permanent and remunerative. How much this habitual and abundant use tends to lessen the evils of intemperance and other vices and extravagances, would form an interesting subject for the social statistician, could the facts be ascertained. Luxury of some sort is the sure concomitant of wealth and leisure; but how much more rational the refined extravagance of the amateur horticulturist—the luxury of indulgence in rare and costly fruits, flowers, and landscape adornments (all kindred employments)—than the exciting pleasures of the wine-cup, the too often distinctive indulgence in narcotism and debauchery, and the fashionable fascinations of modern midnight and late-hour gaieties and dissipation.

The question of profitable fruit-growing, resting as it does, not on the exaggerated profits of isolated localities or varieties, but on its universal consumption and general cultivation in all sections and in all parts, elevations, and depressions of our State, calls for continued trial and careful introduction of every species and variety of fruit which may be capable of filling new uses, or supplying deficiencies of the older sorts. And it is always pertinent to inquire what new species of fruits give promise of the best adaptation to California. It is quite likely that there are many new and valuable dessert, cooking, canning, drying, and fancy fruits that might be easily and beneficially introduced among us, from the older sections of our own country, as well as from the world at large.

The quality and comparative excellence of these new fruits when introduced from abroad, or from our own seedlings, should be ascertained by actual trial by our *Bay District Horticultural Society*, through a committee appointed for the purpose, or by those who have practiced testing fruits and are known to be reliable judges. And all useful or promising fruits should receive from our Horticultural Societies, wherever situated, fair trials and most candid comparisons. This, we have no doubt these Societies will always give them, and we trust when we arrive at

this desirable method, the results therefrom will prove as beneficial to us all, as the movements already made by the Horticultural Societies of the State have been honorable, liberal, and patriotic.

New Figs, of fine quality and size generally, appeared in our markets for the first time this season on the 6th of June, selling at 50c. per pound.

Apples came in at the beginning of June in fair supply, but as usual, at first were mostly green and of poor quality. Unripe Pears also made their appearance about the same time, but by the time our present number appears, both Apples and Pears will be beginning to be mellow and of good quality.

Peaches are coming in rather sparingly at the present time.

The second crop of Strawberries are in, in much finer ripeness and condition than they were ten days since. They are, of course, falling off, and on account of the advent of a pretty large quantity of Raspberries this season (chiefly on account of its continued coolness till within these last few days), there is no pressing demand for them; and the quantity sent in has been, for a month past, ample for all wants. It is calculated that nearly a million and a quarter pounds of Strawberries have been consumed already this year.

Currants, Cherries, and Gooseberries are still in great abundance.

Large consignments of Plums are now coming in.

Two or three cargoes of Tahiti Oranges have come to hand since the first of June.

Chile Strawberries sell for 40 to 50c. per pound, while the common red obtain only 10 to 20c.

In addition to our quotations above, we give the following: Cherries, 15@20 cts. per pound for common, and 25@35 cts. per pound for choice; Raspberries, 20@25c.; Apricots, 8@20c.; Currants, 10@12c.; Gooseberries, 10@12c. for small, and 20@25c. for the English description; Wild Blackberries, 20@25c.; Whortleberries, 25c.; Cherry Plums, 20@25c.; French Prunes, 25@35c.; California Prunes, 12@25c.; Brazil and Filbert Nuts, 25c.; Walnuts, 15c. for Chile, and 20c. for California; Smyrna Figs, 25@35c. per pound; Bananas, 75c. per dozen.

The first Watermelons of the season arrived on the 19th of June.

As to vegetables, Tomatoes are much more plentiful, and therefore much cheaper. Cucumbers, also, keep declining. Egg Plants are increasing fast at 20@25c. per pound. Green Corn sells from 10 to 30c. per dozen, according to quality. Green Onions are quotable at 20@25c. per dozen bunches; Spinach and Rhubarb, 6@8c. per pound; Green Okra, 50c. per pound; Windsor Beans, 5c. per pound; Sugar and Marrowfat Peas, 5@6c. per lb.; Summer Squashes, 4@5c. per pound: cultivated Mushrooms, 50c. per pound; Mint, 10@25c. per bunch; Lentil, 12c. per pound; Chile Peppers, 25@50c. per pound.

Watermelons from Suisun made their appearance on the 25th of June.

The first Nectarines came to hand on the 26th.

Bloodgood Pears, about the same time—a great improvement upon the Madeleine.

Grapes from Solano County—the Zinfindel—on the 27th of June—though inferior for the table.

Strawberries and Raspberries were still in plenty in the latter part of June.

Cultivated Blackberries are now in plentiful supply.

Cantaloupe Melons are becoming also plentiful. Also Peaches in great abundance.

Editorial Gleanings.

Setting out Trees by the Roadside.—The growth of timber to take the place of our rapidly disappearing forests, has led farmers in some sections to set out trees. While it may not be convenient or desirable for all to adopt this plan, every one can set trees by the roadside along his own land. There are many advantages to be derived from them, which can be seen at once to more than pay for the trouble. They beautify the premises, and give a better appearance to the landscape. And if the trees are Maple, which is one of the best, and most easily raised, when grown they will furnish a large yield of maple sugar. If Butternut or Walnut, the nuts are, in a measure, a compensation for the labor of setting them out. There is to be in the future such a demand for wood, that it will not answer to cut down and not replace in some way. In Baden, and in other German States, as well as in some of the departments of France, the law obliges a person to plant a tree in the place of every one cut down. In this way, miles of rows of shade-trees line the roads, making pleasant shaded walks through all the towns and villages. It is a fact not generally known, that trees increase their wood-making capacity in about the ratio, as the square of the number of years indicating their age. The third year they make nine times, the fifth year twenty-five times, and the tenth one hundred times the amount of wood they make the first year. The trees grow more rapidly as they get older, and we can not afford to cut them down until they get their growth.

Some towns in this section have already formed associations for beautifying their sites by planning parks and setting out trees by the roadside. If this is not done, individuals can, with but little trouble, and without expense, procure trees and set out in front of their own lands, and stimulate their neighbors to do the same, so as to make a uniform and continuous line of shade-trees along the roadside.—*New England Homestead.*

Charcoal on Flowers.—A correspondent of the *Revue Horticole*, says that not long ago he made a bargain for a Rose-bush of magnificent growth and full of buds. He waited for them to blow, and expected Roses worthy of such a plant, and of the praises bestowed upon it by the vender, but when it blossomed all his hopes were blasted. The flowers were of a faded hue, and he discovered that he had only a middling multiflora, stale color enough. He, therefore, resolved to sacrifice it to some experiments he had in view. His attention had been directed to the effects of charcoal, as stated in some English publications. He then covered the earth in the pot in which the Rose-bush was, about half an inch deep with pulverized charcoal. Some days afterward, he was astonished to see those which bloomed of as fine a lively rose color as he could wish. He determined to repeat the experiment, and, therefore, when the Rose-bush had done flowering, he took off the charcoal and put fresh earth about the roots, and waited for the next spring, impatiently, to see the result of this experiment. When it bloomed, the Roses were at first pale and discolored, but by applying the charcoal as before, they assumed their rose-red color. He then tried the powdered charcoal in large quantities upon Petunias, and found that both the white and violet colored flowers were equally sensitive to its action. It always gave vigor to the red or violet colors, and the white Petunias

became veined with red or violet tints; the violets became covered with irregular spots of a bluish or almost black tint. Many persons who admired them thought they were choice new varieties from the seed. Yellow flowers appear to be insensible to the influence of charcoal.

Forest Trees.—One of the hard things for our prudent, thrifty people to learn, is the climate value of forest trees. The first thing the old settlers did was to destroy the forests; and their descendants in most places still value trees solely for the wood they will yield. But the more enlightened agriculturists begin to see the fatal mistake made in robbing the hills of their natural covering, the sources of moisture, and attractors of rain. The forests are not only fertilizers, but also the irrigators and reservoirs of a country. In New England, and some parts of the West, farmers are planting trees to restore the fertility of the soil, and prevent the distressing droughts of summer. The history of the Isthmus of Suez has taught us a striking lesson in this respect. A few years ago, the whole region through which M. de Lesseps' famous canal now passes hundreds of richly laden vessels, was a sterile desert —the rain-fall amounting often to less than an inch during the year. There were no trees to be seen far or near. When the energetic Frenchman began his gigantic enterprise, he at once directed thousands of trees to be planted in proper localities; they grew up, thanks to careful irrigation, and now the astonished eye of the traveler beholds blooming prairies and stately forests, where once all was waste and wild desert. But a still greater change has come over the climate; rain now falls frequently and abundantly, the soil produces richly; and if that man is to be counted a benefactor, who can make a blade of grass to grow where none could be raised before, true glory belongs to him who has thus created, as it were, a fertile land, capable of maintaining thousands of industrious and happy citizens.—*Exchange.*

Chiccory.—There is considerable attention given to the production of this root in California. There are now three companies at work, one in Sacramento County, another in Yolo, and a third in San Joaquin.. The Sacramento company commenced last spring by planting 70 acres, and will next spring plant 180. The average yield is fifteen tons of green, and three of the roasted root, to the acre. In Yolo, 100 acres are cultivated, and we suppose San Joaquin must have still more, for the Stockton *Independent* estimates the entire crop of the State for this year at 5,000 tons, implying the occupation of not less than 300 acres. The Stockton factory pays $15 per ton for the green roots. Heretofore we imported largely of Chiccory, but two years since we raised a surplus across the bay and shipped considerable to New York. During the current year imports to a limited extent were renewed. The *Independent* says: "The manufacturers express the opinion that the growth and development of this interest and source of wealth will be slow in this State, from the fact that the action of the last Congress in reducing the duty on the imported article from Europe, not only brings the California producer into direct competition with the foreign laborer, but actually places the Pacific coast venture at a positive disadvantage. Chiccory raised in the German States can be laid down in New York for $12 per ton freight,

whereas the freight on the California product laid down in the city, is about one-third more than it is from Germany. It is contended, therefore, that the production and manufacture of Chiccory in California, under existing circumstances, will be limited to the supply of the home demand."—*San Francisco Commercial Herald.*

Sulphur to Kill Vermin.—It is well to know that the powdered sulphur of the druggist is the cheapest, handiest, and best thing yet discovered for killing parasites that infest sitting hens, and find their way to fresh pastures upon the chickens as soon as the latter are hatched. Many times the people complain that when the chickens are a week or two old, they drop or die from the attack of large lice, which literally cover the heads of the birds. If examination is made earlier, it will be found that the insects have taken up their abode upon the chickens' heads while still in the nest, for they forsake the hen, preferring the chickens. It is bad business to have to catch the chickens for treatment after they have left the nest, when the remedy can be applied with so little trouble before hatching begins. A week or so after the hen has been given her clutch of eggs, sprinkle them and the whole of the nest and straw, for a little distance around, with the sulphur, when the hen is off. The night following, attend to the hen herself, by lantern-light. Disturb her just enough to make her bristle her feathers, and then dust sulphur well down to their roots. Go over her whole body thoroughly, excepting the parts in contact with the nest, and lift each wing and scatter a pinch; attend to the head, neck and tail. It will not injure the hen in the least, nor the chickens when they are hatched. We repeat the operation at an interval of a week—though perhaps one application is sufficient—and have never found the slightest trace of vermin upon hens or chicks afterward. Use two small handfuls. It costs little either in money or trouble. Tobacco, snuff, grease, carbolic powder, etc., are not to be compared with sulphur for this particular purpose, and the best dust-bath privileges for the hen are not to be relied upon alone.—*Exchange.*

Compost Heaps.—It is often recommended that when manure is thrown into heaps in the field, it should be covered with a layer of earth, to prevent the escape of the ammonia. The experiments of Dr. Voelcker, at the Royal Agricultural College, at Cirencester, in England, have established the fact that evaporation of ammonia from large heaps of manure goes on but slightly; for the reason that during the decomposition of the manure certain organic acids are formed at the same time the ammonia is evolved, and these immediately unite with the ammonia, forming non-volatile compounds.

There is an active escape of ammonia from the interior of large heaps, where the heat is too great for the chemical change above referred to; but, as it approaches the exterior part of the heap, where the heat is very much less, the ammonia is completely taken up by the organic acids and retained.

There will be but a trifling escape of ammonia, while there is sufficient moisture to retain it, for water absorbs and retains many hundred times its bulk of ammonia gas at ordinary temperature. These non-volatile compounds, from being highly soluble in water, are liable to be washed away at every rain-storm, giving the well-known color to the

drainings of manure heaps.—*Maryland Farmer.*

Mesquite Gum.—M. F. Kalteyer, Treasurer of the Agricultural and Industrial Association of Western Texas, says the Mesquite gum of that region is almost identical with gum-arabic, having been in use there for medicinal and other purposes, especially in the preparation of mucilage, gum-drops, jujube paste, etc. The past year it has become an article of export, some 12,000 pounds having been gathered in Bexar County, and as much more between that and the coast. No gum is gathered west of Bexar, though the drought was favorable to a large crop. This gum is hardly known east of the Brazos. It exudes from the stem and branches of a Mimosa, several species of which grow in Texas, New Mexico, and Arizona. One of these species, *Algarobia glandulosa* (Torrey and Gray, N. A. F., 399), is rarely met with below the mountain region of western Texas. The species most common in Bexar County grows from twenty to forty feet high and eighteen inches thick. From it charcoal is manufactured. It is generally used for picket-poles, being very durable. It is also made into handsome furniture, the grain being very fine. It grows where no other fruit-tree would live. It was favorably noticed in the last annual report of the American Pharmaceutical Association.

How to age Wines and Brandies.—There have been various methods and processes suggested and tried, to give the qualities of age to brandies and wines. One process consists of heating the wines or brandies; and another, of freezing them. One consists of pumping air into the wine; while another pumps it out. Each and all claim perfection for their processes; but those who have tried them thoroughly have condemned all these expedients, as entirely inefficient in producing the benefits promised. The only change effected was a vapid softness, that in no manner resembled the qualities acquired by age. Age develops the flavor through a long, slow, and gradual change of the natural ingredients of the wine; and when this flavor has become fully and agreeably developed, it is called bouquet. There is no artificial process yet invented which can produce this result. It is much to be regretted that many of our wine-makers are so enterprising, because they have been, and still will be, victimized by every sanguine process-inventor who comes along. Thousands of gallons of good wine have thus been spoiled annually, by people who wish their wines to acquire all the qualities that age alone can communicate. But we learn as we grow older; and the good days of these would-be inventors are passed. We are fast coming to the conclusion, that Nature's laboratory, managed by Time, is the most perfect of all; and man can follow closely, but not excel, nor even equal, Nature's silent work.—*Overland Monthly.*

Result of Forest Extermination.—Sardinia and Sicily, once the granaries of Italy, have suffered the penalty of their thoughtlessness in exterminating their forests. Two thousand years ago, those lands were celebrated for their wonderful productiveness, and were said to be the most beautiful in the world. In 1800, Humboldt visited Venezuela, South America, and was informed by the natives living in the valley of Araguay that they had noticed, with great astonishment, that a lake

which lay in the middle of the valley had decreased in volume every year; the cause of this is clearly traced to the felling of a great number of trees which grew on the surrounding mountains. In Hungary, the periodical droughts are universally attributed to the annihilation of the forests. In Cairo, lower Egypt, a great many years ago, rain fell but seldom, only once in three or four years; but since the time of Mohammed Ali, twenty to thirty millions of trees have been planted, and the result is now that the people have from thirty to forty rainy days every year. Surely these few of the many examples are warnings sufficient to put us on our guard.

Coffee-making. — Professor Leibig, the German chemist, says good coffee should be rich in two principles, extract and aroma. When boiled a long time, coffee is rich in extract but deficient in aroma; and when boiled only a short time it is rich in aroma but deficient in extract. In order to obtain both of these properties, Professor Leibig directs to take two-thirds of the ground coffee needed for a meal, put in the water and boil briskly a considerable time, and when the meal is nearly ready, take the coffee from the fire and add the remaining third of ground coffee; stir it well, let it stand a few minutes and serve.

The above directions will not avail much if the coffee is not properly roasted. Roast often, and in small quantities at a time.

According to M. Schadler, only half the quantity of finely ground coffee is needed, in order to produce the same strength of beverage obtained by the ordinary coarse-ground article. If, after the Oriental fashion, the ground coffee is crushed fine in a mortar, only two-fifths of the coarse is needed. Infusion, boiling or filtering through a bag, all have the same result as regards strength, except that by filtering, the aroma of the coffee is better preserved.

Keeping Apples in Plaster.—A writer in the *Rural New Yorker* says: "I have been experimenting the past few years with Apples, and find those packed in plaster keep much longer than any other way I have tried. I use flour barrels, and find them preferable to apple barrels, as they are made tighter. I first cover the bottom of the barrel with plaster, then a layer of Apples, then cover with plaster, and so on till the barrel is full; then put the head in and drive the hoops tight. The plaster being of a cold nature, keeps the fruit at an even temperature, and being fine and dry, packs so close as to keep the Apples air-tight. I had Northern Spy and Swaar almost as fresh in May as when they were picked, and found no decayed ones, and think they would have kept till early Apples where ripe, had we not used them. Shall put up several barrels for next spring and summer use, as I am satisfied that our best varieties, such as Steele's Red Winter, Wagner, and Seek-no-further will keep several months longer than putting them up without any plaster, and will retain their flavor much better besides."

The Guano Islands. — The stock of guano on the islands near Peru is nearly exhausted, and it is estimated that the supply from these sources will fail within four years. A Peruvian journal, published at Lima, says, however, that immense guano beds have been discovered on the mainland, north of Callao,

of a quality superior to that found on the celebrated Chincha Islands. The discovery is the result of an exploration set on foot by Henry Meiggs, the great railroad contractor. Another expedition sent to a place near Pisco, where it was reported there were large deposits, ascertained that no guano was to be found there. The beds north of Callao, where it is said that millions upon millions of this valuable fertilizer lie within easy reach, are the resort of sea-lions in immense numbers.—*Exchange.*

As an offset to this, an exchange gives the following, which we hope to be true:

It is said there are in Russia no less than 50,000,000 acres of land, which will yield 5,000 tons of phosphate of lime to the acre. This contains 20 per cent. of phosphoric acid. The decay of the guano trade is evidently destined to have little effect upon the agriculture of the world, for that manure will be replaced by artificially prepared phosphates.—*Farmer and Gardener.*

Value of Forest Leaves.—The New York *Tribune* says: "Every farmer has within in his reach material, which, if gathered and mingled with the more easily decomposed matter, will furnish for his crops food of the richest description. Of these, the first in importance are forest leaves. These rapidly decay and contain a much larger proportion of the most valuable fertilizers than the wood. While the dry wood contains from one-tenth of a pound to four pounds in the hundred, of potash, dry leaves and young twigs contain from half a pound up to ten pounds of potash in the hundred. Almost exactly the same relative proportion holds good in regard to the phosphoric acid contained in these substances. A hundred pounds of leaves of the mixed forest growths, common in the United States, will yield nearly two pounds of this most indispensable fertilizer.

Filberts.—The *Turf, Field, and Farm* has the following in reference to the cultivation of Filberts: "We were surprised, on visiting one of our Broadway fruit-shops, to find fresh Filberts, imported from Kent, in England, selling with their heavy green husks on for 80 cents per pound, and this has been the average for several years. Why should not our farmers in the Middle and Southern States grow Filberts? The climate which will produce good peaches will also produce Filberts, and all of our light tobacco lands in the basin of the Chesapeake are as well suited to their growth as the soil of Kent, and certainly at the prices now ruling in New York, or at even half these prices, Filberts would prove the most profitable product within the whole range of agriculture. Nor is the adaptation of the soil and climate of our Middle States to the growth of these nuts at all problematical, for they have been grown in a small way on some of the old homesteads in Virginia for more than a hundred years."

Coffee.—For reasons not revealed, there is a growing deterioration in Coffee from every source of production. It is probably the same cause that deteriorates all fruits and other products, viz., confining cultivation to constant selections without variation. In time, like intermarrying cousins, this breeding-in runs out all vegetable stock. The world is being relieved of worn-out Tea-plants, by new growths in new soil—in India. That country is going very extensively into Coffee culture. Already we find in English papers praise of In-

dia Coffee that rivals Mocha, Java, and Jamaica. Coffee in India is becoming an important article of agriculture and export. In the southern counties of California, Coffee can be grown. We understand that this is demonstrated; and we are assured that, once in bearing, the Coffee-trees demand little care and insure large profits. — *Willamette Farmer.*

Substitute for Grafting-Wax.—I had no regular grafting-wax, and yet wanted to graft some Apple-trees. I tried various substitutes, but none of them answered. I thought of covering some cotton with a thin solution of resin and grease, making, in fact, a sort of sticking-plaster of it. This I did, and cut into strips about three-quarters of an inch wide, hanging them on a little pole for use. After cutting and fitting the grafts, I took about ten inches in length of these strips, and bound the graft round and round, using the sticking part next to the tree. It answered splendidly, and the grafts were retained in their position as rigidly as if they grew there. The weather could have no perceptible effect on them, as the grafting-strips stuck fast to the graft, and were perfectly water-tight. The speed with which each graft was made was something worth noticing; and to prevent the cotton sticking to the fingers, nothing more was requisite than to use a little grease on the operator's hands.—*Science of Health.*

Cranberry Culture.—If your peat bed is so situated that it can be drained at will and the surface is sandy, it is the best possible location for Cranberries. When the surface is not sandy, it is usual to cart on sand for the purpose. In this way some of the best Cranberry-beds East have been made. It prevents the vines growing too strong, and keeps down weeds until the vines cover the ground. Upon a pure peat or muck bed, we should not plant. Of course, Cranberries can be raised from seed; but since the Cranberry roots easily from the vine, it is far better and in the end cheaper to buy cuttings with which to make your plantation. Besides, if you can make your plantation from cuttings or roots, and buy of responsible parties, you get the variety you wish to grow. There are now several superior varieties in cultivation.—*Western Rural.*

Plant Trees.—Every citizen who has no trees about his residence, should see to it and plant shade-trees. To estimate the value of groves and shelter-belts in this country would be as difficult as to estimate the value of good health in dollars and cents. No man knows how to appreciate either, until, having enjoyed one or the other, he is deprived of the blessing. The benefit to be derived from a grove in summer is that of shade and protection from flies; while the belt of timber, if properly arranged, will protect the farm from devastation by the storms of winter. They will furnish protection to both man and beast from the chilling winds, and add fifty per cent. to the value of the place.—*California Farmer.*

India-Rubber.—The belt of land around the globe, 500 miles north and 500 miles south of the equator, abounds in trees producing the gum of India-rubber. They can be tapped, it is stated, for twenty successive seasons without injury; and they stand so close that one man can gather the sap of eighty in a day, each tree yielding, on

an average, three tablespoonfuls a day. Forty-three thousand of these trees have been counted in a tract of country a mile long by eight wide. There are in Europe and America more than 150 manufactories of India-rubber articles, employing 500 operatives each, and consuming more than 10,000,000 lbs. of gum a year; and the business is considered to be still in its infancy. But, to whatever extent it may increase, there will still be plenty of rubber to supply the demand.—*Cincinnati Price Current.*

Perfumes.—The English magazine, *All the Year Round*, contains an interesting article upon the manufacture of perfumery, of which we learn that, from the middle ages up to the last century, musk, civet, ambergris, and lavender sum up the best known and most popular perfumes. It is only of comparatively quite late years that the art has made so much progress, and been enriched by so many new ingredients, as we find at present. Nevertheless, and in spite of all additions, the base of European flower-scents is contained in six flowers only, namely, orange-flowers, roses, jasmine, violets, acacia, and tube-roses. Others that have been tried are found of small use, and their special odor is best given by imitative compounds; as heliotrope is imitated by vanilla dashed with almonds, and so on. Add to these six bases, geranium, lavender, rosemary, thyme, and some other aromatic herbs—the last three growing chiefly upon the mountains around Grasse, Nice, and Cannes, which are the principal European centres for the manufacture of perfumes; add also the peel of bitter oranges, of which the fruit goes to make curaçoa; the peel of citrons and bergamots, of which the fruit goes to feed the cows of the district, and is good for the milk; add musk, sandal-wood, ambergris, and gum benjamin; of later days add the leaves of the patchouli, from India; wintergreen, from the United States; various of the andropagons, called by us goats' beard, from Ceylon; ihlang-ihlang, from the Philippine Islands; vanda, an orchid, chiefly from Java, but from other places too in the Indian Archipelago; frangipani, from both the East and West Indies—and we have some of the principal sources whence our scent-bottles are filled, and the delicate soaps and pomades perfumed. But still, wheresoever the material is to be found, the French always remain the greatest producers; and, save as regards a few exceptional perfumes—as attar-gul for one, eau-de-cologne for another—are the best manufacturers of the sweet scents which pervade the world. They do an immense trade in perfumery, and England is their best customer, as Russia is their worst. England took, in 1867, 424,500 kilogrammes of perfumery, valued at 2,546,000 francs; Russia only 13,300 kilogrammes, at the value of 79,800 francs. After England comes Brazil, then Belgium, and then Spanish America; but even Brazil does very little more than half the English trade, and Spanish America less than half. The United States took 57,400 kilogrammes, valued at 344,400 francs; and Austria only 14,600 kilogrammes, paying for them 87,600 francs. Germany, in spite of her own especial industry at Cologne, took 107,800 kilogrammes, spending 646,800 francs upon her purchase; but it would be interesting to know what amount of her own perfume she exports, and which of her numberless Jean Marie Farinas has the largest business connection. England does a good trade in her own lavender water, but by far the greater proportion is ex-

ported; perfumes, like prophets, not having much honor in their own country, all that is foreign being instinctively preferred to what is home-bred, and the question of comparative excellence counting for nothing in the choice.

Killing Weeds in Lawns.—The American *Rural Home* says: "Dock, Canada thistles, horseradish, dandelions, and other strong-rooted varieties, are frequent tenants of the grass-plot. They obstruct the lawn-mower, and, when shaven as close as the grass, spring quickly into prominence again. Perhaps the best way of killing them out is to use a narrow-bladed spade, or a strong knife, which will cut the root deep enough under the surface, when it can be pulled up, and in most cases will not grow again. This, however, is not the case with strong-growing and extremely vital plants, like horse-radish, thistles, and dock. These require more frequent treatment, and perhaps something additional to cutting. If a little salt, or what is much better, kerosene, can be applied to the cut surface of the roots, it generally kills them completely.—*Exchange.*

Protect the Trees.—In setting out young shade trees it is a good idea to place around them such protection as will insure them from injury. This frame, or whatever it may be, should be of such a nature as to do more good than harm, and should be removed as soon as the trees have attained sufficient stability to care for themselves. We notice a large number of trees in town that had been boxed up when young, and, the boxes not being removed when the trees grew up, are now suffering because of the owners' carelessness. The boxing around large trees should be removed, and that around young trees should be so fixed as not to damage the trees.

Product of the Osage Orange.—The wood of the hedge-plant known as the Osage Orange (*Maclura aurantica*), if boiled in water, yields a handsome yellow extract, which is used in Texas as a dye. From it a large percentage of tannin is obtained. The seed of the fruit also yields a valuable oil, abundant, bland, and limpid, resembling olive oil, and burning with a steady flame in an ordinary lard-oil lamp.—*Rural Southland.*

Effect of Oxalic Acid on Seed.—An English scientific journal states that oxalic acid promotes the sprouting of seeds, so that seeds forty years old will germinate by its application. The method is to soak the seeds for one or two days in a solution of oxalic acid, till they commence to sprout, when they are taken out and planted.—*Exchange.*

METEOROLOGICAL RECORD,

For the Month Ending June 30th, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 508 Battery Street (opposite the Custom-house.)

BAROMETER.

Mean height at 9 A.M.		30.11 in.
do	12 M.	30.10
do	3 P.M.	30.09
do	6 P.M.	30.08
Greatest height, on the 27th at 12 M.		30.29
Least height, on the 4th and 30th at 6 P.M.		29.93

THERMOMETER.

(*In the shade and free from reflected heat.*)

Mean height at 9 A.M.		59°
do	12 M.	64°
do	3 P.M.	63°
do	6 P.M.	59°
Greatest height, on the 17th and 23d at 12 M.		70°
Least height, on the 12th and 14th at 9 A.M.		55°

SELF-REGISTERING THERMOMETER.

Mean height during the night	42°
Greatest height, on night of 16th	48°
Least height, on night of 8th	37°

WINDS.

North and north-west on 5 days; south and south-west on 5 days; west on 20 days.

WEATHER.

Clear on 16 days; variable on 13 days; cloudy on 1 day.

RAIN GAUGE.

June 16th	0.08 inches.
Total rain during the season	18.02 "
Average rain-fall during the past 24 seasons	23.80 "

THE GOLDEN MORNING GLORY.

(*Aniseia aurea*—KELLOGG.)

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. AUGUST, 1873. No. 8.

THE GOLDEN MORNING-GLORY.

(*Aniseia Aurea.*) — KELLOGG.

This new native golden Glory, was found by Prof. George Davidson, of the United States Coast Survey, on his recent expedition to Lower California (at San Juan del Cabo, twenty-five miles west of Cape San Lucas, latitude 23° 03′) to establish or verify the former site of the ancient observatory of the transit of Venus.

The genus *Aniseia* was formed from plants separated from the old *Ipomœa* and *Calystegia* species of *Convolvulaceæ*, owing to the unequal size of the scales of the green cup of the flower. This is therefore one of the many forms of Morning-glories, so well known to florists. These twiners possess rare beauties and graces, as do all plants that prettily wind and festoon the shrubberies and lattice-work of rural retreats. White and blue, pink and purple are the prevailing hues of this family of flowers, yellow being relatively a rare color. This has also the diversity of a deep dark purple eye and tube, together with unusual size, as seen in the figure. It has the appearance of being a perennial, which in our genial winter clime of the coast, would prove ornamental most of the year round. These points, apart from the generous hand-shaped leaves it holds out to us, must commend it to the attention of florists. Trained with or in proximity to the common native Cloak-cup Morning-glory (*Calystegia sepium*), it would form a charming bower or screen of ceaseless glory, in gold and royal purple, pink and white flowers, exhibiting a rare combination of lasting beauty.

Fewer specific details are required when a good figure enables one to seize at a glance the strong points that discriminate one species from another, even the rarest novelties. Still, some features are not always manifest; besides, a focal review ever aids and brightens, as it perfects, knowledge.

Strictly speaking, it might be said that the stem twines from right to left against the sun, or opposite to the way that orb appears to revolve. The alternate leaves are digitate by fives; the axils are turned topsy-turvy or reversed—that is, the flower-stems are sub-axillary (by reversion); the proper flower-stem, it will be seen, is jointed close below the flower, with two or three very minute bract-like scales at the articulation. The green calyx, or flower-cup, is formed of five or six unequal scales, the first

series of three outer or lower; the three others, successively higher, form the second series, which are larger, except the fifth scale or lobe, which is narrower; and the sixth, or inmost and highest set, is a mere sharp, delicate membrane, scarcely one-fourth the length or size of the others. The outermost lowest rudimentary scale is not included. The upper flower is laid open, and a scale removed, to show the short proper purple tube; the short smooth purple central style, which is two-lobed; the five filaments or threads, bearded below, with long anthers, which in the dry state twist from left to right, or the contrary way to that of the stem (that is, from east to south to west, or just the way the sun does. The seed-vessel is two-celled, with two smooth seeds in each cell. The medical properties will be referred to hereafter.

Hard and Soft Water.—All housewives may not know how materially the effects of hard and soft water differ in the cooking of various vegetables. While one species of vegetables requires hard water, another species becomes sensibly deteriorated by it. For instance, Peas and Beans cooked in hard water, containing lime or gypsum, will not boil tender, because these substances harden vegetable caseine. In soft water they boil tender, and lose a certain raw, rank taste, which they retain in hard water. Many vegetables (as Onions) boil nearly tasteless in soft water, because all the flavor is dissolved. The addition of salt often checks this, as in the case of Onions, causing the vegetables to retain their peculiar flavoring principles, besides much nutritious matter, which might be lost in soft water. Thus it appears that the salt hardens the water to some degree. For extracting the juice of meat, to make a broth or soup, soft water, unsalted and cold at first, is best, for it much more readily penetrates the tissue; but for boiling meats where the juice should be retained, hard water is preferable, and the meat should be put in while it is boiling, so as to seal up the pores at once.—*Zion's Herald.*

DESIRABLE PLANTS OF RECENT INTRODUCTION.

BY F. A. MILLER.

Every year new plants are introduced; some of them prove valuable acquisitions to the garden or the greenhouse, while others are of little merit and should be cast on the rubbish heap. Catalogues which are sent out annually from the large establishments of the East and from Europe, present to the reader long lists of new plants, and the flower-loving community are often misled by brilliant descriptions of plants which in reality have no merit about them. Our florists here in California import annually from the more extensive floral establishments of the East and of Europe, plants, which according to description promise to be meritorious; but too often they meet with disappointment in this respect, receiving plants such as prove to be of no value in our climate. A nurseryman here considers himself fortunate if one out of every five plants he imports is meritorious and desirable for our market. Out of the list of plants imported within the last two years, the following have proved excellent additions to our already extensive collections, and may be safely recommended to every lover of plants and flowers. They are deserving of extensive culture, are easily taken care of, and may be now obtained of our most

prominent nurserymen and florists. I will begin with the *Eranthemum Tuberculatum*, which was first introduced here in the spring of 1872, and flowered during the same summer. Its blossoms are pure white, star-shaped, delicate and pleasing, resembling the well-known Jasmine, one of our most popular greenhouse climbers. It flowers with me continually, summer and winter; its habit is dwarfish, neat and compact. As a house plant I can strongly recommend it, and I am quite sure it will give general satisfaction. It thrives well in almost any soil, and does not require large pots. It is easily propagated by cuttings.

Torenia Asiatica is an exceedingly pretty flowering plant of recent introduction. Its flowers are trumpet shaped and of a very rich velvety blue with a dark shading. With me it has flowered continually, and is admired by every one who sees it. It may be made available for baskets also. In well-protected places, and in a warm exposure, I am inclined to believe it would thrive well in the open air. If grown in pots, the soil should be well drained with charcoal to keep it from becoming sour. It is readily propagated from cuttings, and the young plants will flower freely soon after being rooted.

Streptocarpus Resii, a native of Australia, was brought here two years since, and of all the house plants it is one of the most remarkable for the profusion of flowers which it produces at all times. It is a gesnerious plant, and its flowers are similar in shape to the Gloxinia, but smaller, of a bluish white color, blotched and striped with lilac. Unlike the Gloxinia, it does not require any rest; plants which I have under cultivation have never stopped growing and producing flowers in great abundance continually. This is one of the most valuable acquisitions, and will prove most popular with florists as well as amateurs.

Begonia Weltoniensis was brought to California last year, and has proved to be the very best of the flowering Begonias ever introduced. Its habit is excellent. Of dwarfish and dense growth, its shining, crimson stems and leaf-stalks, its vividly bright green foliage, and its delicate, waxy pink flowers, make it one of the most attractive of flowering and foliage plants for the house. It flowers freely all the year round, and does not seem to be at all particular about soil or treatment. Keep the plant moderately moist, and you can not fail to be successful with it.

In connection with the above I would mention two more varieties of Begonias of recent introduction: *Begonia Boliviensis*, a tuberous-rooted variety, producing very showy bell-shaped flowers of large size and of a bright red color, very distinct from all others, and quite a striking novelty. *B. odorata*, a plant of excellent habit, handsome foliage, and unusually large spikes of pure white flowers, which are deliciously fragrant; one of the most desirable varieties of flowering Begonias.

Eucharis Amazonica, a bulbous-rooted plant, is a native of South America. Although introduced into European gardens several years since, it may be considered new in this country, as but very few plants have found their way into the floral establishments of California. It promises to become one of the most popular flowering plants under cultivation. The flowers are of a pure waxy white color, and have a most delightful perfume. It may well be said to rival the Camellia for bouquets. Although the flower may neither be so effective nor so pleasing to some as the Camellia, its fragrance fully makes up this deficiency, and when we bear in

mind that the Eucharis produces an abundance of flowers throughout the different seasons of the year, after the plants have become sufficiently strong, its value as a florist's flower can hardly be overestimated. The cultivation of the *Eucharis Amazonica* is not attended with any difficulties, and in any ordinary greenhouse it will thrive well in this climate if kept moist. It should be encouraged by an occasional manure watering, and should be allowed plenty of pot room. A warm and shady position is desirable; it is also important that the soil should be well drained. At this time the stock of plants is small, and but very few specimens are for sale, but I hope that in another year plants may be obtained at a reasonable rate.

There are, of course, many other new plants under cultivation here, and many of them are promising, such as the different varieties of the Clematis, the White Grape-myrtle, Ferns, some most remarkable and beautiful tender ornamental foliage plants, Roses, etc., but as they are too numerous to mention in this article, I will endeavor to speak of them at some other time.

Within the last two years the importation of new and rare plants has largely increased. It is for our flower-loving amateurs to encourage our nurserymen in their efforts to keep pace with the progress which Floriculture has made and is continually making in the Old World and in the more settled Eastern States.

A CORRESPONDENT of the Santa Barbara *Press* writes thus:

"The English Walnut shows itself as a stately, magnificent tree, with clean, grayish bark, and widely-spreading branches. It is, like our own black walnut, a tree of slow growth, and does not begin to bear until seven or eight years of age. In twelve years, with thorough culture and irrigation, it bears from 50 to 75 pounds of nuts; at fifteen years, from 100 to 160 pounds; thirty trees may stand on an acre, and it is customary here to plant Almond trees between the rows of the Walnut, which pay the cost of cultivation and a handsome profit, and are cut down when the Walnuts begin to cover the ground. Nuts sold this year for 12½ cents per pound in Los Angeles. A little arithmatic will tell you that, at 100 pounds to the tree, which, for an orchard fifteen years old, would be, everybody tells me, an under-estimate, the yield would be $375 per acre. The only expense is the cost of cultivating and irrigating; one man could easily care for thirty acres. The nuts fall when ripe and are picked up and sacked as Hickory-nuts with us. It is asserted that the tree is absolutely free from disease or enemies in the State; it needs no pruning, and it may be safely transplanted when three years old, so that the planter would get a crop in seven years. At twenty years trees have borne 250 pounds of nuts. Two English Walnut trees near Santa Barbara, thirty years old, have yielded $50 worth of nuts each per annum for several years past."

TO GET TENDER HORSE-RADISH.—An English gardener says: "It may not be generally known that if leaves or litter be placed on the tops of Horse-radish crowns, two feet or so thick, the plants grow through them in the course of the summer, making small white roots the thickness of one's finger, which are as tender as spring Radishes, and much to be preferred to the tough, stringy stuff usually supplied with our roast beef."

SOWING SEEDS—TRANSPLANTING AND PRICKING OUT.

BY E. J. HOOPER.

There is often complaint made that some kinds of seeds will not vegetate. This is often owing to sowing them too deep, and this evil of deep sowing is not confined to the open garden. One cause why seedsmen get such bad names when seeds will not grow, is owing to this too-deep covering, or placing of seeds in soil so water-logged that, though they swell, the air can not get at them and decomposition is the result. As a general rule, small seeds in pots should seldom be more covered than the thickness of their own size. A little shading, before the seedlings appear, is far better than a thicker covering. In the case of all seeds, and especially those a little old, it is always safest to place them in soil a little moist, and to allow the seeds to absorb moisture from it gradually, instead of watering the soil, except after some time, as in our California springs and summers, and then only rather sparingly. In general cases, and especially in the case of small seeds, the necessary moisture should be given by watering the pots well before sowing, after draining them well, and filling them with the light, sandy, proper soil, and then waiting a day or two for the soil in the pot to become a little dry on the surface before sowing. When covered afterwards, according to the size of the seed, and the mouth of the pot covered with a square of glass, and that shaded from sunshine before the young seedlings appear, hardly a good seed will fail to grow. Even then careless watering overhead will ruin myriads of tender plantlets. It is safer to communicate moisture from below, or flood the surface by pouring the water on a piece of crock held close to the inside of the pot. The whole of the young tender plants may thus be moistened without coming immediately in contact with fluid from the rose of the watering pot, upon their tops. The previous moistening of the pots before sowing is sufficient, in most cases of nicety, to supply the requisite moisture until the young seedlings are past danger. Care should also be taken in sowing tender things in pots, that the soil should be from a quarter of an inch to half an inch distant from the rim. When pots are filled more full than that, a careless rose-watering will often send the seed out of the pot. Frequently when I have found, in my practice in the East, a pot empty of seedlings, I have discovered them in abundance among the ashes in which the pots were plunged. If these little matters were attended to, I feel confident that less blame would be thrown on the shoulders of seedsmen, most of whom make it a point of honor to do their very best for the gratification of their customers.

Another cause why seeds saved by amateurs and others refuse to vegetate, is, that after cleaning they are often left in a place thinly spread out, and exposed to the full force of the sun. The carbon, or starchy matter, becomes so fixed, or indurated, that it will not change into a sweet, sugary substance for the nourishment of the embryo. I have known five kinds of cucumber seeds much injured by exposure to the sun for months, or weeks, on the open shelf of a hot-house. A few days would have done them no harm.

TRANSPLANTING AND PRICKING OUT.

When seeds are sown thickly in a bed out of doors, the young plants are injured when they stand for a long time thick in the seed-beds, and are greatly

improved by being pricked out; such vegetables for instance as Cabbage, etc., as well as some flowers, should be set out two or three inches apart in intermediate beds. This is even more necessary with all tender things, sown in pots, and placed in a higher temperature than the open air. If these are left long in the pot, and especially if at all thick and drawn up, however carefully watered, there is a great likelihood that many of the plants will rot and shank off at the surface of the soil. Mere thinning will not prevent the evil. The least carelessness will sometimes present you on a morning with a surface of slimy, decaying matter, instead of the lively, brisk little seedlings you admired yesterday. I have even had something of this, when, as I thought, I had seen that moisture, air, and a gradual hardening off were sufficiently attended to. I confess I have been sometimes nonplussed to assign the right cause for the disappointment. Pricking off, however, is the great preventive. In the case of small things, like Lobelias, Calceolarias, etc., there is no necessity to prick them individually; for, if moved in little tufts and placed in other suitable soil, in pots, pans, or boxes, the danger of fogging off will be next to thoroughly obviated; and when these little tufts increase in size, then you can prick out the largest first, and thus go over them all ultimately. The chief requirement in these prickings out is to have nice, light soil, suitably heated before using. When watered, use water quite as warm as the temperature of the house and pit, and place the pricked-out plants, for a time at least, in as high a temperature as the seed-pots stood in. Where room is scarce, the pricked-out plants need not occupy much more space than the seed-pots, if thus pricked out in patches half an inch apart; and the greater safety of the seedlings will more than compensate for the labor. Even thinning the seed-pot, and stirring the surface of the soil, and covering it with charcoal dust, though useful processes, have not such a salutary tendency as pricking the plants off, either singly or in little patches.

(To be continued.)

ALFALFA FOR CATTLE.

It has frequently been stated that no pasture could be found better adapted to the sustenance and fattening of cattle than Alfalfa. Its merits are based on several distinct facts, established by experience. First, it is more nutritious than ordinary grass; second, it produces more abundantly; third, it requires but little attention; fourth, it is good either for pasturage when green, or hay when cured. These conclusions were arrived at in a debate held the other day before the Farmers' Club of Napa County. Mr. Cornwell stated that he had twenty acres in Alfalfa, seeded in 1854, and although it had suffered greatly from the depredations of gophers, he regarded it as the most profitable piece of land he owned. It yields three times more feed for cattle than any other pasture. In sowing, he first seeded with grain, and when it was half an inch high sowed the Alfalfa and brushed it in. He gave the grain a start so that it would protect the Alfalfa from frost. He understood that seed raised here is not as tender as that which comes from Chile. The seed is worth from 25 to 30 cents per pound. The second year after sowing his, he cut it down five times. Loose soil is more favorable than heavy.

Mr. Trubody has a neighbor who sowed three or four acres of Alfalfa on

low, close land, and cut from it seven tons to the acre. He thought there was no trouble in producing it, if it was safe beyond the danger of frost. Mr. McIntire had a similar experience to relate. Alfalfa, he said, does well when it is properly cultivated. One of his neighbors has drained and plowed twice before sowing; another has plowed and harrowed well, and both pieces were fine. The former was seeded on the 10th of April. Mr. Lane, near St. Helena, has ten acres from which he cut two crops of hay before August, and then kept stock on it till late in the fall. Thought spring sowing best. Had sowed with Barley, but thought it better to sow Alfalfa alone. This concurrence of testimony ought to be satisfactory as to the superiority of Alfalfa as food for live stock, and secure it more popularity with farmers than it has hitherto possessed.

Lux & Miller, who are among the largest cattle-raisers in the State, for beef, own extensive ranges of land on the San Joaquin and its tributaries. Of late they have seeded large tracts of land with Alfalfa, which flourishes to such an extent as to make one acre of land supply as much food for cattle as was formerly yielded by twenty acres. More than this, the Alfalfa land supplies food for cattle the year round, whereas hitherto the same land furnished grazing only five or six months in the year. The general introduction of Alfalfa into grazing regions will not only improve the quality, but increase the quantity of beef, and besides enable the graziers to dispense with the use of three-fourths of the land now occupied by them.

You may glean knowledge by reading, but you must separate the wheat from the chaff by thinking.

California Flower Season.—A correspondent at San José, California, writing early in January says: "In this balmy western land, we sit to write by open windows, inhaling the perfume of Heliotrope and Mignonette. Daisies sparkle in the sun after the early shower. The fall-sown Italian and lawn grasses have covered the brown soil with tenderest green. Springing wild grasses are clothing the distant hills. Singing birds at this sweet morning hour fill the evergreen Oaks with melody. Down the street, door-yards are bright with Pinks and Pansies. Hundreds of porches are festooned with delicately tinted Roses. Scarlet Geraniums and Fuchsias climb luxuriantly through fences and over walls. Petunias, Verbenas, and the royal Calla Lily are as common as Morning Glories were in the States twenty years ago. In the gardens and on the lawns of the wealthy, we find the golden blossoms of the Acacia, the scarlet berries and graceful foliage of the Pepper-tree, and fine Oleanders in a perfect blaze of roseate bloom. Our busiest spring time of seeding and planting is here. Farmers are busy with plow, harrow, and drill; the orchardist and the vintner with knife and shears."—*Horticulturist.*

Congressional Aid to Forest Tree Culture.—Although we have not yet seen the act, yet definite information is now obtained of the fact that our last U. S. Congress passed an act to the effect that anyone who will plant and keep in growing order for five years, not less than forty acres of trees, shall be entitled to one hundred and sixty acres of the public domain to which the planted quarter or section belongs. It is said that the act only specifies that the trees shall not be more than eighty feet apart.

WEEDS.

[Continued from page 204.]

"One of the most interesting features of the subject of the distribution of plants on the earth, is the way that some plants invade a region they are carried to, but where they are not native. Three of the most common forage plants of California (and there called *native plants*) are plants that have no value in the countries whence they came. They are natives of the region about the Mediterranean, where they may be called harmless weeds, not troublesome, and not particularly useful. One of them, the Wild Oats (*Avena sterilis*), is found from Palestine to the Atlantic, but I never heard that it is of any value there. But in America, it clothes the plains of California, and western Mexico; also parts of South America, and the Island of Juan Fernandez. Great areas of hundreds or even thousands of square miles together are seeded with it, and millions of animals feed on it. So with the two others alluded to, Burr Clover (*Medicago denticulata*), and Alfilerilla (*Erodium cicutarium*). They are nutritious and valuable forage plants, from Oregon to Chile; yet, in their native lands they have little value. These plants have spread precisely as foreign *weeds* do, only they are valuable ones, and they illustrate the principle. And whether a harmless plant here may be a troublesome one somewhere else, is beyond the power of man to guess. That is a thing to be established by experience alone; neither science nor previous experience can tell with certainty. Twenty years ago some farmers wished me to visit a locality where they thought they recognized a bad weed. They were from Eastern New York, where the Snapdragon is a vile pest, and thought they had recognized an old foe near their new home farther west. I examined it; it was the Snapdragon, yet no one tried to exterminate it. It was by the roadside, and it seemed no one's particular business to do so. Fifteen years or more later I saw it again; it had scarcely extended at all; it was simply in an uncongenial region, and there it did not flourish; it was a weed still, but a very harmless one. In our brooks and streams, here and there, is a little water plant, more common perhaps in Canada than here; not rare here, however, and I have never heard that it was very troublesome. It was accidentally introduced into the waters of England, where it has spread so rapidly as to interfere with navigation. It costs thousands of pounds sterling every year to keep it out of the canals. A story that it had been put into a river by a noted botanist called down on his head the direst complaints; the plant was named from him, and it is now extensively known there as "Babington's Curse." He was not guilty, but even if he had been, no one could have predicted that it would have been such a *curse* in English waters. I give these as but illustrations, which might be extended to many more cases than I could cite in one lecture.

"As an example, right here at home, of a plant called a vile weed, which is usually harmless, I have an illustration before me. A few months ago the Report of the Department of Agriculture gave a list of some native plants that might be cultivated for ornament. Among them was one, rather common in New England, known to botanists as *Potentilla fruticosa*. Immediately your secretary protested. In Litchfield and Berkshire counties, and regions adjoining, it is a vile shrub, especially injurious to moist pasture land, and is called *Hardhack*. Another shrub is usually

known under that name elsewhere, but with you this is so much worse than the genuine article that it has stolen its name. (I inquired of the farmers at this meeting, and all agreed that this is a vile pest of the pastures and meadows, but I have not heard that it is troublesome elsewhere).

"In short, weeds are not only troublesome, but they are also very capricious. The most abundant, and perhaps the most widely-spread plant on the earth, the common Brake (*Pteris aquilina*), is not hard to eradicate, and will not thrive at all if cultivated."

THE HAZEL—(CORYLUS ROSTRATUS.)

BY DR. A. KELLOGG.

"The Hazel Bush o'erhangs the thrush,
The spreading thorn the linnet;
Thus every kind their pleasure find,
The savage and the tender."—*Burns.*

Who will say why the wild woods woo so gently, or who may tell all their charms? Let us consider the Hazel, among many, for a moment, ere we pass on. Freshening the breath of spring with enlivening odor, the soft, velvety, new leaves of the Hazel spray forth archwise in clean and lively green. Note the delicate, doubly-fringed border—twigs tasseled and powdered in tags, and beset with pretty pink female flowers—anon in sober summer dress of russet-brown fruit, and final glory of yellow, autumn-crowned. A diadem of useful deeds, in the triumphant cycle of its season. Does not that thicket please most that modestly coquets the sylvan visitant, gently caressing while it obstructs, our pathway; yet never so entangling as to forbid the final entrance? 'Tis thus with the witching Hazel. The pet squirrel and the favored child may gather nuts from its boughs; but we will speak of the use of the body and boughs themselves.

Few can realize the value this shrub subserves in an economical point of view. Would any one be apt to suppose that on a wilderness coast like ours, we have been in the habit of importing, if one may say so, from the East, hoops and splints for barrels, and bands for boxes, packages, etc., to a very great extent? But an enterprising citizen of San Francisco has developed

a new source of wealth on the coast, that already gives employment to more than 150 men as collectors, apart from middle men, and final employés. The faggots are split and dressed ready for use, bound in bundles of 50 to 100 each, 4½ to 8 feet in length, as seen in the market. During the year 1872, about 2,250,000 Hazel hoops of the sizes named were used in this State. For want of proper cultivation, we are informed that these young growths are diminishing, and that if better attention were paid to raise this article of commerce it would pay handsomely in the future. Sonoma and Marin counties, in the State of California, produce the

largest number of hoops, while Olympia, Steilacoom, and Seattle on Puget Sound, and Vancouver, W. T., on the Columbia River, are next in order of production. Not one of the woods on this coast except Hazel is adapted for this purpose, and all importations from other countries have ceased.

Thus we see, in the ultimate industrial details of *one citizen only*, how much we owe to industry in the small—which is the greatest industry of all, if allowed the jingling proverb.

A GOOD LIST OF ROSES.

Each season lists of Roses are made out by the respective florists for the gratification of flower-lovers, and they all get into print, and none of them agree. We observe that every florist's idea of a good list of Roses is gauged considerably by the question: Are they easily propagated? If so, he can sell them, and, of course, indorses them. It has become so much the rule now for every florist to recommend as best only those sorts which he can propagate easily, that we must beg pardon for saying we can not trust their interested opinions altogether. The following list was made out by an amateur who considers the list a very good one because the flowers are good, and in climate south of 42° are all good growers. We doubt if the list can be excelled;

Best six ever-blooming Roses for General Use. 1. Giant of Battles, crimson. 2. General Jacqueminot, scarlet crimson. 3. Indica Alba, white daily. 4. Glorie de Dijon, yellow, copper centre. 5. Appoline, bright Rose. 6. George Peabody, purplish crimson. These are all fine-blooming Roses, and *hardy*, which is a great thing for standards. There are, however, numerous others equally as fine, which other people would designate as *their* favorites.

Best three Roses for Circular Beds for Permanent Effect and Continuous Bloom. —1. Safrano (Tea), Apricot color. 2. Hermosa (Bourbon), pale pink. 3. Washington (Noisette), white. These are fine-blooming Roses, but those who like darker colors would prefer Lord Raglan, dark crimson, but not a free bloomer; Charles Martel, another superb crimson, and Cardinal Patrizzi, very dark crimson, good bloomer.

Two Varieties for a Rose Hedge.—1. Herbemont Cluster, bears a profusion of white clusters, and blooms till December. 2. Appoline, a most lovely fall Rose, growing in good ground from ten to fifteen feet, and glorious from September to November. It blooms profusely during the summer, but as the fall advances its color is of the most vivid pink.

Bouquets in Paris.—Americans can not appreciate the almost universal custom in Paris and London of button-hole Bouquets. As an evidence of their immense use, a French journal asserts that the average annual sale of bouquets of Violets in Paris is 5,825,000. While in London it is so much the custom that at entertainments a gentleman appears singular without one.—*Horticulturist.*

The *Gazette des Campagnes* says that Mr. Hucghe has succeeded in changing the common Cowslip from its natural yellow to an intense purple by merely transplanting it into richer earth. The color of plants can be readily varied by mixing certain substances with the soil. Wood charcoal will darken the hue of Dahlias, Petunias, and Hyacinths. Carbonate of soda turns the last-mentioned flowers red, and phosphate of soda alters greatly the shades of many plants.

GUM PLANTS.

The following gum-producing plants are worthy of notice as being indigenous to, or susceptible of, successful cultivation in California. Their products are of high commercial value:

Gamboge.—This gum resin is yielded by several plants. That known as Ceylon Gamboge is obtained from *Garcinia Morella*, a fine tree with glossy foliage, somewhat like that of the evergreen Magnolia. This plant is supposed to be a native of Siam, but has been introduced extensively into other tropical countries. The gum is obtained by making incisions in the bark, or by breaking the branches and collecting the juice as it drops. It is used as a pigment in the arts, and medicinally as a purgative. American Gamboge is obtained from *Vismia Guianensis*, a shrubby plant found in Surinam and Mexico, which abounds in a yellow, resinous juice, resembling in its appearance, as well as other properties, the Gamboge of Ceylon. There are other species found in Brazil and Guiana that yield similar resins.

Benzoin. — Sometimes called Gum Benjamin, is obtained from the stems of *Styrax Benzoin*, a native of Borneo and other Indian islands. Incisions are made in the bark, from which the juice exudes, but adheres. When dry it is removed with a chisel or blunt knife. The gum which exudes from the natural fissures is considered the most valuable, having a stronger perfume than that produced from wounds in the tree. It is used medicinally, by perfume-makers, and as a compound in the mixtures used as incense.

Caoutchouc or India-rubber.—One of the principal plants furnishing this substance is *Siphonia Brasiliensis*, a common tree in the forests of Para, Brazil. This gum exists in the tree in the form of a thin, white milk, and is obtained by making incisions in the trunk, from which it exudes, and is collected in vessels, and afterward converted into the homogeneous, elastic mass, familiar to us as India-rubber, by pouring the milk upon molds, and immediately holding them over a dense smoke. As it solidifies, another coating is formed over it, and the process is repeated until the required thickness is secured. *Siphonia elastica*, *Siphonia lutea*, and *Siphonia brevifolia* also furnish India-rubber of good quality. Others of this genus yield an inferior, brittle gum.

Gutta Percha. — This is the dried juice of *Isonandra gutta*, a large forest tree, reaching a height of sixty or seventy feet, with a trunk two or three feet in diameter. It is a native of the islands of Southern India, especially of Borneo and Sumatra. *Balata* gum is an elastic gum obtained from *Mimusops balata*, a native of British Guiana, where it forms a tree of large dimensions. The milky juice is obtained by incision of the trunk. It dries very quickly on exposure to the air, if the air is dry, and can be molded into shape by being first softened in water. This gum seems to be of a character intermediate between India-rubber and gutta percha, possessing the elasticity of the one and the ductility of the other, without the intractability of India-rubber or the brittleness of pure gutta percha. It is successfully employed as an insulating medium for telegraphic purposes.—*Exchange.*

To Exterminate Insects in Gardens.—Mix with three or four gallons of warm water one pound of black or white hellebore, add eight or ten pailfuls of cold water, and syringe the plants infected.

MANAGEMENT OF THE SURFACE-SOIL.

BY ROBERT WILSON.*

A narrow strip of ground along either side of a fence erected on my own premises last spring, having been trodden down and the surface thoroughly impacted by the feet of the workmen engaged in putting up the inclosure, was found to be quite damp when dug into along in the summer, while the ground by the side of it, which, like this strip, had been deeply spaded up during the preceding winter, was perfectly dry as far down as it had been disturbed. I was engaged in tree-culture in Santa Cruz, and had there a very different experience, having found that the more loose and open the surface-soil was kept the greater its capacity for absorbing and retaining moisture. The explanation of these different results is found in the fact that the atmosphere in the vicinity of Santa Cruz, owing to proximity to the ocean, retains even in the summer a large share of humidity, which the porous condition of the ground enables it to readily absorb, keeping it thereby in a constant state of moisture; whereas, ground near Vallejo, being too far inland to be much affected by the sea air, is in better condition to retain the moisture with the surface somewhat impacted. Hence the advantage of passing over it a heavy roller after it has been sown or planted. Bearing this fact in mind, cultivators of the soil, whatever branch of husbandry they may be engaged in, will be governed accordingly; the principle here enunciated is all-controlling, and should never be lost sight of; being equally applicable to the raising of vegetables, Wheat, or other cereal crops, as to the culture of plants and trees. The soil should, of course, be thoroughly pulverized in all cases, the surface alone being impacted with the roller where the drought is such as to indicate this mode of tillage.

* This gentleman is a practical arboriculturist, having a small nursery near Vallejo, and communicates to us the following fact. We want just such men, who learn by experience, to send us facts from all parts of this coast.

FORESTS AND RAIN-FALL.

The "Bulletin of the Torrey Botanical Club" for February contains a letter from Mr. Fred. Hubbard, which gives a series of facts respecting the relation of rain-fall and forests as exemplified in some of the West India Islands, which we regard as important, and from its bearing on this somewhat disputed subject we think its reproduction here will be useful.

The introductory remarks refer to some previously published statements by Mr. James S. Merriam, of New York:

"Your brief published statement concerning the diminution in the rain-fall of the island of Santa Cruz is in the main correct, save that it gives the idea of a more rapid change than has probably taken place. At my former visit, twenty-seven years ago, the desiccation had undoubtedly made some progress, but not sufficient to make itself manifest in a very marked degree. The change from fertility to barrenness, which at first must have been almost imperceptible, is no doubt taking place in an accelerated ratio.

"Every new plantation swallowed up by the onward march of desolation, augments the cause and renders the arrest of the evil more and more hopeless. This movement is from the east (the windward end of the island) toward the west, and is now quite conspicuous.

Every few years an estate, formerly green with cane-fields, becoming incapable of producing further crops, has to be abandoned to the graziers, whose cattle find a meagre pasturage upon it a few seasons longer. These are in turn driven off, and the land is entirely abandoned. Henceforward it becomes, if not quite a desert, at least a barren waste, producing only a sparse and prickly vegetation, over which a few arborescent cacti reign supreme. A narrow belt of green lines the sea-shore of this region, consisting of cocoa-nut palms, the poisonous manchineel, the sea-side grape, and a few shrubs, whose natural habitat is along the high-water mark; but inland cultivation is impossible without constant irrigation. As there are no streams upon the island, with the exception of a few rills chiefly near the western end, and the wells are failing, no means remain to force life from the unwilling soil. Some attempts were at one time made to arrest this insidious advance, but too late to be effectual. A planter, I was told, not long since set out a thousand trees upon his estate and lost every one. It is probable that had this remedy been universally adopted in time there might be a more hopeful future for Santa Cruz. But the final depopulation of this beautiful island seems now to be written indelibly among the decrees of fate.

"St. Thomas, an island lying thirty miles distant, is similarly affected. This island, however, being loftier, and having scarcely any level land, seems to attract to itself a rather more liberal amount of moisture from the clouds.

"About fifty miles westward of these islands, and in the same parallel, lies the large island of Porto Rico. The land here is almost wholly mountainous, the eastern ridges rising to 3,000 feet. A large portion of the interior is still covered with primitive forest, a tangled tropical vegetation of vivid perennial verdure. The rain-fall is abundant, and the soil yields bountiful crops of coffee and sugar, with a great variety of fruits.

"The contrast between neighboring islands so similarly situated is most striking. The sad change which has befallen the smaller ones is, without any doubt, to be ascribed to human agency alone. It is recorded of these that in former times they were clothed with dense forests, and their oldest inhabitants remember when the rains were abundant, and the hills and all uncultivated places were shaded by extensive groves. The removal of the trees was certainly the cause of the present evil. The opening of the soil to the vertical sun rapidly dries up the moisture, and prevents the rain from sinking to the roots of plants. The rainy seasons in these climates are not continuous cloudy days, but successions of sudden showers, with the sun shining hot in the intervals. Without shade upon the surface the water is rapidly exhaled, and springs and streams diminish. There is also, as many believe, an electrical action produced by the points of leaves upon the atmosphere, compelling it to yield up its moisture. However feeble may be this effect from a single tree, the myriad spears of a whole forest presented to the sky undoubtedly do exert a marked and powerful influence. It is probably from such a combined action that the drying up of the soil from the removal of the trees, destroying the balance of nature, goes on with ever-increasing rapidity.

"An equally marked example of the effect we are considering is seen in the small island of Curaçoa, lying in lati-

tude 12° north, sixty miles from the coast of Venezuela. I visited this island in 1845, and found an almost perfect desert, where, according to the testimony of the inhabitants, had once been a garden of fertility. Abandoned plantations, the recent ruins of beautiful villas and terraced gardens, and broad arid wastes without a blade of grass, showed how sudden and complete a destruction had fallen upon this unfortunate little island. The cause was the cutting down the trees for the export of their valuable timber. The effect followed even more rapidly than at Santa Cruz, as the island lies five degrees farther to the south, and the heat is more intense. The rains have almost entirely ceased, and fresh water is among the luxuries. Almost within sight of Curaçoa is the coast of the Spanish Main, covered with the rankest vegetation, over which the burdened clouds shower down abundant blessings."

Fruit in our Rooms.—We should be chary of keeping ripe fruit in our sitting rooms, and especially beware of laying it about a sick-chamber for any length of time. The complaint which some people make about a faint sensation in the presence of fruit is not fanciful, for two German chemists have shown that from the moment of plucking Apples, Cherries, Currants, and other fruits, they are subject to incessant transformation. At first they absorb oxygen, thus robbing the surrounding air of its vital element. Then they evolve carbonic acid, and this in far greater volume than the purer gas is absorbed, so that we have poison given us in the place of pure air, with compound interest. Temperature affects the rate of changes, warmth accelerates it.

The poppy originated in the East.

MILLET AS A FORAGE PLANT.

As the unfenced and free ranges for stock are, year by year, becoming more circumscribed, and lesser herds of improved breeds of animals are rapidly taking the place of native stock that formerly, in such countless numbers, ranged over the broad plains and valleys of our State; and in view, as we believe, of the very general adoption of the no-fence law, at no very distant day, compelling owners to provide for their stock upon their own premises, it becomes important to know which are the best forage plants for cultivation, as yielding the largest quantity of nutritive food per acre.

To a very great extent we must rely upon cultivated forage, our uncultivated grasses being entirely inadequate to the production of sufficient forage to maintain the requisite stock on a given number of acres, in the proper condition of flesh. It is this that has prompted us heretofore to discuss the merits of Alfalfa, the Clovers, the Malva, Rape, etc., as desirable forage plants, and now of Millet, with the same view.

Indian Millet is identical with the Dourah Corn of Africa, and known in the United States as Dourah Corn and "Tennessee Rice." There are two varieties — the white and brown. The brown is the most productive; said to yield four times as much seed per acre as the white; but the meal or flour of the white is much lighter, and nicer in appearance. Millet will do well upon very poor soils, but the product is largely increased upon dark, rich lands, like the alluvia of rivers.

It is usually sown broadcast at the rate of a bushel to the acre, in March, April, or May. Care should be had in securing good seed, as when procured from abroad it is very likely to be weevil-

eaten. It is important to get a good stand, but once up, it will grow in spite of frost, rain or drought, being a very hardy grass, and will make a crop in spite of every disaster. It is sometimes cut green and fed to cattle in the stall, and if not cut too close to the root, will grow again from the stubble, and in this way can be cut several times in a season.

Its seed product takes a wide range, from 10 to 100 bushels per acre in ordinary seasons. It is also cut and made into fodder for winter's use, and does not require to be made as dry as most other grasses, and when housed quite green, does not ferment or spoil, even when closely packed or baled. It is a frequent practice to turn all manner of stock into Millet-fields when half the grain has ripened, and in a short time all will get fat on it, and still leave the ground covered knee-deep with the stalks, which cattle and sheep eat greedily quite into winter.

The whole plant, seed and stalk, is considered healthy and nutritious, and animals eat it from the time it comes up, till the last stalks are consumed in autumn or winter. Besides serving as food for fowls and animals, it is used in Egypt, India, and China as food by the inhabitants. A failure of this crop in Arabia would be as great a calamity, almost, as that of the Wheat-crop. It is their food and fuel, and grows by scanty irrigation on land that can scarcely produce any other grain. It is ground into flour and cooked alone into cakes and bread, or mixed with rice-flour and other food. In many parts of Germany it is substituted for Rice, and sells for about the same price.

There are, besides the white and brown, other varieties of Millet, and among them the Hungarian, or, as it is sometimes called, Hungarian Grass. This makes an excellent forage crop, though not as prolific in seed as the African variety. D. B. Dixon, of Muscatine, Iowa, in a report to the Agricultural Department, speaks of the Hungarian Millet as follows:

"It is luxuriant in its growth, and produces hay of the finest quality. Horses and cattle eat it with avidity. Farmers in every part of the county should give it their attention, as it will make more and better feed than any other kind of grass now known in the United States. Our western farmers in particular should learn its value; for its destiny is to change the agricultural product of this portion of the Union, and substitute cows, horses, mules, and sheep in place of hogs. We have raised hogs, heretofore, from necessity, simply because our only reliable crop was Corn, and other domestic animals required hay, or its equivalent, which we could not produce with cheapness and certainty.

"A good crop of the Hungarian grass is about three tons of hay and thirty bushels of seed to an acre, while it will often go beyond, and seldom fall below this. Such crops were grown last season, notwithstanding the drought.

"It should be put into the ground in the same manner as Oats, harrowing before and after sowing. The time for cutting is when the seed is nearly ripe, and the whole plant of a fine yellow color. If cut too early, the seed will not be perfect, and if too late, it will shell out in curing, the stalks will also be too woody. It may be cured in the same manner as other hay. As fodder, after thrashing, it is fully equal to Timothy; and when fed out with the seed in, as it generally should be, it is better than good sheaf-Oats.

"I am sowing, this season, 100 acres of this grass, from which I expect to

raise at least 3,000 bushels of seed."

Taking into consideration the fact that it will yield more green food, more hay and grain, on a greater variety of soils and with less labor in any season, and return more litter to the land if fed off upon it, than any other grain or grass, and being a universal food for man and beast, in all tropical or semi-tropical climates, it may be justly considered one of the most valuable of the cereals, and well worthy the attention of California stock-growers.—*Press.*

CULTURE OF THE MUSHROOM.

The Mushroom (*Agaricus campestris*), named after a kingdom of Sarmatia, belongs to the twenty-fourth class of Linnæus, ninth order and tribe.

A writer in the *Canada Farmer* says many persons regard the culture of the Mushroom as a great mystery, but it is not so. On the contrary, it is as simple as growing a crop of Corn, cultivating a Grape-vine, or raising a bed of Cabbages, and can be done in any out-of-the-way place, taking up little room and requiring little attention. It can be raised in winter, when no other crop can be cultivated, and a regular supply obtained for family use; or, if conducted on a larger scale, with a view to disposal in our city markets, there is nothing to hinder, and a most profitable business may be made out of it. All farmers keep horses and cattle and have plenty of manure, and it may be mentioned that the quantity used for Mushroom-beds is not lost, for when new beds are formed the old may be returned to the manure pile. There is no occasion for building a place to grow them in: they can be grown almost anywhere in an inclosed place, even in the kitchen or sitting-room, but the best place is a close horse-stable, or even a mild cellar, etc., where the soil can be kept from freezing. For the mode of culture, take a box ten or twelve inches in depth, and as long and as broad as the space will permit or may be desired, pack it down with six inches of horse droppings broken somewhat fine, on this three inches of dry cow droppings made fine; *moisten* this, but do not wet or deluge it, with a strong brine of nitre or saltpetre water. In the cow manure plant the spawn, which can be had at the seed stores in the form of a brick. This should be broken into moderate sized pieces as large as a walnut, and should be set in a triangular form, thus, ***, and covered from an eighth to a quarter of an inch (not more than the latter) with fine, dry soil; cover the whole with an old carpet, or any heavy cloth, so that the light will be excluded. Of course no sun is needed, but just the contrary, perfect darkness is required. I have not tried the above, but suggest that it may be useful to some of the Horticulturist's readers.

A Subscriber.

Vine Disease Spreading in Portugal. A cable dispatch announces that the vine disease has spread into Portugal. A few weeks ago it was stated that the Grape-crop in the south of France and in the champagne districts of that country was a comparative failure, while not very flattering accounts were received from the wine-making regions of Austria. Spain is in too disturbed a condition to give the vine-crop the attention it demands. The prospects are, therefore, that the wines of California will have the opportunity of obtaining a footing in the European market during the coming season, such as they never have had before.

TRENCHING.

Trenching is an expensive operation, but nothing is so expensive and troublesome as an ill-prepared soil. This process is found to be of great advantage in England, where there is no lack of moisture, and still more so by the market gardeners of the Northern States; while in our own dry, warm climate, it is, as I know by experience, absolutely indispensable. Ground thus prepared is not so liable to wash away, as it will readily soak up the rain, no matter how heavy, if properly terraced. There is no point of greater importance than this in gardening, for without a well-prepared soil there is no success. Poor ground deeply moved is better than rich with shallow tillage. And when the ground has been prepared once in this manner, it is good forever afterward. Increasing the depth of the soil in this mode, is to all intents and purposes increasing the size of your garden, for a quarter of an acre thus prepared will yield in a dry season as much as an acre will with shallow tillage, and the growth of plants in a season will be fully doubled. Trees, especially, will be admirably benefited, and all fruit gardens should be thus prepared. No matter how deep you may work the soil for trees or plants, their fibres will penetrate it and feel the good effect. The fall is the most suitable time for the operation. The manner of performing is to commence at one side of the piece of ground intended to be trenched, measure from five to six feet, or more, in width from the fence or boundary, and from three to four feet in depth, and remove the soil to the other side, or where you intend to finish, so that you will have some soil to put in the last trench. It must be borne in mind that the top surface goes into the bottom, and it would be still better if there was manure of some kind to be had to put in the bottom. When the whole plat is trenched, it should be leveled, and a coat of decomposed manure dug into the surface, and with a light top dressing of a good compost in the spring, before planting, you will have a piece of ground serviceable to posterity.

A Subscriber.

Timber Lands around Lake Tahoe.—The value of accessible mountain timber land generally has increased very much within the last two years, along the line of the Central Pacific Railroad. Much of the timber adjoining that road from Clipper Gap to Reno has been cut down, and roads and shoots are constantly being opened farther back, north and south, by means of which the greatly increasing demand for lumber is being supplied. The sawmills around Lake Tahoe now pay an average of $1.25 a thousand for lumber in the tree. Each tree averages 2,000 feet, and each acre 23,000 feet of lumber, which, at the price first named would place the value of each acre of timber land at $28.75. Of course there is not much land in which all of the trees would be large or good enough to be worth cutting. Five dollars each is often paid, however, for large trees. There are yet millions of acres of timber land around Lake Tahoe, at least one-half of which is owned by the Central Pacific Railroad, and is held firmly by the Company at $10 to $20 per acre.

Two parties lately offered W. W. Lapham a contract to lay down six million feet of logs at Tahoe City, at $5.50 per thousand. His land is at the southern end of the lake (Lake Valley.) He would only have to pay for the cutting

and towing across the lake, a distance of twenty-five miles. Fifty cents per thousand is charged for towing. The mill at Glenbrook pays $5.12 a thousand for logs delivered there. The timber around the lake can very easily be shot down to it, because the land all slopes down to the very edge of the water, even in Lake Valley, where the nearest approach to level ground is found.

Insects in Orchards.—In the discussion on insects at the late meeting of the Minnesota Horticultural Society, many interesting facts were elicited concerning insects in that State. Much trouble has been experienced with leaf lice, borers, moths, curculios, etc. A number of remedies were given for these pests. For leaf-lice, a decoction of tobacco is sometimes successful, when applied at the proper season. A wash composed of three pounds of sal-soda dissolved in a pailful of rain-water, is another remedy, and also three ounces of whale-oil soap to a pailful of water; apply upon the first indications of the lice. The trees will be injured if much soap is used. Carbolic acid will kill trees if not carefully used. Mr. Gideon binds ashes around the affected parts to kill borers. Others cut them out with a sharp knife, or punch them with a wire. Moths are destroyed in various ways. Several kinds of traps have been invented, some of which are very successful. The idea is to furnish a hiding-place for the moths where they can be destroyed. Bands of hay or old rags are sometimes bound around the trunks of the trees to serve as moth-traps. Mr. Mendenhall stated that there are 1,600 kinds of leaf-lice, and 400 kinds of curculio.

Tobacco is a native of Virginia.

Mulching.—In placing mulch or moist litter of various kinds upon the surface of the soil of newly planted trees and shrubs, a little earth should be thrown upon it to keep it in its place. This is neater than exposing it on the surface. It is used to prevent moisture from evaporating; it also prevents frost from penetrating to the roots, and should be also applied where drought is prevalent. Strawberries thinly mulched, the crowns left uncovered, are much more productive, and continue longer bearing. Potatoes produce more abundantly, and of better quality. English Peas are thus kept longer in bearing, and Rhubarb and other plants requiring a cool soil can be more readily raised. Fruit-trees, by being thus treated, are kept in better health and vigor. It wards off drought by keeping the ground moist, and by the decay of the mulching substance a great deal of nutriment is conveyed to the roots of the plants. A supply of small, fibrous roots are thrown out at the surface, by which tap roots are obviated in a great measure, which are inimical to the production of blossom buds. But the great benefit of mulching is, that a steady permanency of moisture is retained in the soil in spite of adverse circumstances and without stagnation. The coat of mulching ought to be three or four inches in thickness, and from two and a half to three feet in diameter, in proportion to the size of the plant. It should not touch the collar of the plant. The foregoing should be practiced by many on this coast.—*A Subscriber.*

The Petaluma *Argus* notices favorably a new shade-tree raised in that county from the seed. It is known as the Australian Stringy-bark, a species of Gum-tree, and grows rapidly.

Editorial Portfolio.

THE AQUARIUM.

How vast is the field opened up to the enthusiastic study of the naturalist, the philosopher, and man of science, by this magnificent accession to the appliances of the student of nature; what an invaluable adjunct to their means of observation! But a very few years since, the most prominent naturalists of the present age were scarcely conscious of the existence of the immense varieties of animal and vegetable life which are now the objects of careful study by thousands of earnest observers.

The taste for the study of natural history has been of late marvelously on the increase, and the aquarium has doubtless wonderfully assisted in developing this interesting pursuit. The diversity of life in brook, in river, in lake, in bay, and in the vast ocean itself, is now in course of enthusiastic investigation by scientists of every grade in all parts of the world, and the results of their studies and the interchange of their observations and discoveries will afford highly interesting and instructive reading matter in all our periodicals in every part of the globe.

Among many other instructive lessons exemplified in the development of the Aquarium, is the great system of compensation, by which the equilibrium is preserved between animal and vegetable life, and the mutual necessity of the two great departments of animated nature, the one to the other, unmistakably established—not only for the ordinary functions of life, but for the more occult necessities of their several existences. Animals absorb oxygen from the medium in which they live, and throw off carbonic acid in exchange; so do vegetables, but these take up carbon in much greater quantity than they exhale it; and during the season of their most active growth they give out more oxygen tahn they consume at all other times. This is the great basis upon which successful management of the Aquarium depends, and however its requirements may be temporally evaded or audaciously modified, they can not be ignored with impunity.

The first Marine Aquarium was established about 1842, in London, by Dr. Johnstone. Of course, it was on a small scale, a mere experiment; but Lavoisier, De Saussure, Priestly, Inglehouse, and Ellis, had already established both philosophically and chemically the great balance of life. And particularly was this subject elucidated by Prof. Daubeny, in 1833; subsequently, Dr. Lancaster, Mr. Ward, Mr. R. Warrington, and Mrs. Thynne contributed their experiences, while Mr. Gosse established himself as a high authority in this branch of science. To these and many other ardent students of nature is to be awarded the honor of advancing this study to the position it holds in the scientific world, and its general popularity. Still later the labors of Mr. Lloyd have largely contributed to the advancement of this highly interesting research into these hitherto occult departments of nature.

Within the last few years, Aquariums on a very large and magnificent scale have been established in several of the great cities of Europe; among them may be enumerated those of Hamburg, Berlin, Paris, London, Havre, and Brighton; in these the science has been prosecuted with untiring energy, and its popularity has proportionately advanced; but in the United States little advancement has been made, and the Marine Aquarium established by Mr. R. B. Woodward, in his delightful Gardens at San

Francisco, is the only one yet constructed on this continent. This last achievement of the very enterprising and public-spirited proprietor has lately been thrown open to the public, after a very protracted delay attributable to the difficulty of procuring suitable material and sufficiently skilled labor, and also to a multitude of annoying misadventures which further experience will obviate. The opening took place on the 4th of July, and was preceded on the 2d by an inaugural inspection by a numerous party of scientific men and representatives of the press, to whom invitations had been issued, and who partook of a bountiful and *recherché* collation in the reception hall of the Aquarium. The guests were evidently much gratified, and since the opening the concourse of visitors has been very great. The specimens exhibited are very numerous and above average representatives of their several families, many are very curious, and some quite rare—all are new in their present relations to the public. No systematic arrangement has as yet been attempted, as owing to the difficulties of getting the establishment into efficient working order, and sundry misadventures, the mortality has been very considerable, but eventually due attention will be given to the classification.

THE RAIN-FALL AT SAN FRANCISCO.

In the last number of this magazine we offered for the perusal of our readers an excellent article on the above subject. There are many points in it worthy of the deepest consideration by not only the cultivators of the soil, but by the public in general; and as this subject bears intimate relations with those of Forest-tree Culture and Irrigation which we have so frequently and earnestly advocated in our magazine, in a future number we shall endeavor most forcibly to point out their identity with the prosperity of this and neighboring States, and the necessity for energetic action in relation to them.

Professor John Muir's Idea of a Bouquet.—Had I been able, in descending this one small side-canon, to "pluck up by the spurs" one of each of the mountain pines that I met, together with one of each of the other cone-bearing trees, my big resiny bouquet would have consisted of, first, the short, straggling *Pinus flexilis*, then *P. contorta*, *P. ponderosa*, *P. monticola*, and *P. Lambertiana;* two spruces—the elegant drooping *Abies Hookeriana*, and the noble *A. Douglassii;* the burly brown-barked *Juniperus occidentalis*, the grand *Libocedrus decurrens*, and the two silver firs, *Picea amabilis* and *P. grandis*. Had we gathered the shrubs, we would have had two maples, four willows, two dogwoods, two honeysuckles, three manzanitas, one kalmia, one mountain-ash, one amelanchier, one vaccinium, one ledum, two ceanothus, one bryanthus, one cassiope, two spiræas, one rose, two brambles, one azalea, one kamnus, three currants, and a few others.—*Overland Monthly.*

Wheat Yield.—The average yield of Wheat in different countries varies remarkably. In Austria it is 14 bushels per acre; in France and Prussia, 17; in Spain, 23; while in Britain the average yield is from 28 to 30. The yield of Barley in France is 21 bushels per acre; in Prussia, 25; and in England from 35 to 40 bushels per acre; in Manitoba from 40 to 60 bushels per acre by merely plowing without any artificial manuring.

WOODWARD'S GARDENS.

There is much to entertain and instruct both adults and the rising generation in this very deservedly popular place of resort. The conservatories and greenhouses are in excellent condition and resplendent in magnificent specimens; with a rich reserve which only awaits the opportunity for display. The Zoölogical Department is continually improving in number, condition and variety. Many valuable animals have recently been added; especially is this noticeable in the amphibia. But decidedly the most attractive department at the present time is the *Aquarium*. Of this department we shall speak more fully at some other time. In the Plant-houses we notice *Bananas Cavendishii* in magnificent foliage; *Mangifera nuxifera* in bearing; *Zingiber officinale* (Ginger), and *Z. cassumunar*, in vigorous growth; *Maranta discolor; M. zebrina; M. alba linearis; M. rosea linearis*, in very fine condition; *Gesneria alba, G. amabilis, G. magnifica, G. zebrina, G. cinnabarina* in flower, and *Gloriosa superba;* also *Achimenes* and *Gloxinias* in variety.

The *rex* varieties of Begonia are in fine leaf, and the Colei are in elegant foliage. The orchidaceous or parasitical plants are also displaying their flowers. Among the Ferns, we particularly noticed *Pulu, Lomaria gibba*, and *Alsophylla excelsa.*

CATALOGUES RECEIVED.

Wholesale Catalogue of California Native Bulbs, Seeds, and Plants, selected and for sale by Miller & Sievers, 27 Post street, San Francisco. We are in receipt of this important and interesting catalogue. It will be welcome to dealers and nurserymen both at home and abroad. This same firm proposes to publish catalogue number 2, of rare seeds of California, Australia, Japan, Chili, and other countries, in October; and catalogue number 3, which will be a general descriptive catalogue of plants, etc., under cultivation, and will be published in December next.

Ornamental Catalogue of T. C. Maxwell & Bros., nurserymen of Geneva, N. Y., together with a special circular of new Evergreens of their introduction—a well-prepared catalogue, select yet copious. We observe that the *New Golden Arbor Vitæ, Lutecæ* (George Peabody) has received from the Royal Horticultural Society of London a first-class certificate: "We can not avoid saying, after careful tests of its merits, that it is the finest variegated evergreen America has yet produced."

Vick's Floral Guides, II and III, are very acceptable, well got up, and illustrated, and contain a large amount of useful information. The article on "The Seed Business and the Post-office," in No. 3, is an important one.

FAVORS RECEIVED.

We beg to acknowledge the receipt of two beautiful chromos—"The Strawberry Girl," and "Mischief Brewing"—from Messrs. Orange Judd & Co., of 245 Broadway, New York, the enterprising publishers of *Hearth and Home* and *American Agriculturist*. The subscribers to these two well-known papers for 1873, will be presented with these two exquisite pictures, which are well worth framing.

The *Overland* for August, a very interesting number, in which "Explorations in Tuolumne Cañon," "South of the Boundary Line," "California Indians," are particularly readable papers; "Etc." with its "Chinese View of the

Pigtail Ordinance," and "Current Literature," generally, are well worthy of perusal.

We are in receipt of the *Premium List* of the Kansas City Industrial Exhibition and Agricultural Fair, with the Rules and Regulations and List of Premiums. This Fair will be held from the 15th to the 20th of September inclusive. The list of premiums calls for an extensive display. We wish the managers every success.

The Poultry World. Hartford, Ct. Published by H. H. Stoddard. Monthly. $1.25 per annum. This is a neat magazine, which can not fail to be welcome to the poultry raiser. It is filled with excellent hints, advice, etc., for those who keep fowls of any kind, either for pleasure or profit, and is profusely illustrated.

FAIRS AND EXHIBITIONS.

Autumn Exhibition of the Bay District Horticultural Society.—Notwithstanding the reverses which the Horticultural Society met at their last Spring Exhibition, it was decided at their last regular meeting to hold another exhibition this autumn. In this undertaking the Society has been encouraged by the number of public spirited gentlemen who have become life members of the Society during the past two months. The exhibition will open on Tuesday, Sept 30th, and close on Saturday, Oct. 4th. It will be kept open for five days only. It is thought this will induce a greater number of nurserymen and fruit-growers to exhibit, as the loss of time and stock has always been considerable on account of the long duration of the fair.

We most sincerely hope that this next exhibition will be a success. We believe the public appreciate these exhibitions, and we confidently trust that a proper support will be given.

The management is in good hands, and no effort will be spared to make the exhibition attractive, instructive, and entertaining. We are aware that there exists a growing taste for flowers, and a fair appreciation of the horticultural products of California; these are so thoroughly represented in our fairs that a liberal support should be given them. The premium list has come to hand and can be had of the Secretary. It is varied and prepared with care, offering over $1,500 in prizes for the various horticultural products of the State.

Effects of Vegetable Perfumes on Health.—An Italian professor has made some very agreeable medical researches, resulting in the discovery that vegetable perfumes exercise a positively healthful influence on the atmosphere, converting its oxygen into ozone, and thus increasing its oxidizing influence. The essences found to develop the largest quantity of ozone are those of Cherry, Laurel, Cloves, Lavender, Mint, Juniper, Lemons, Fennel, and Bergamot; those that give it in smaller quantities are Anise, Nutmeg, and Thyme. The flowers of the Narcissus, Hyacinth, Mignonette, Heliotrope, and Lily of the Valley, develop ozone in closed vessels. Flowers destitute of perfume do not develop it, and those which have but slight perfume develop it only in small quantities. Reasoning from these facts, the professor recommends the cultivation of flowers in marshy districts, and in all places infested with animal emanations, on account of the powerful oxidizing influence of ozone. The inhabitants of such regions should, he says, surround their houses with beds of the most odorous flowers.

NEW AND RARE PLANTS.

A NEW ŒNOTHERA.—A charming novelty has been introduced in Ireland, which in the opinion of the *Irish Farmer's Gazette*, has strong claims to be regarded as A 1, among the charms of hardy flowering plants.

We allude to a new dwarf Œnothera, from Utah, which we saw in flower at Glasnevin last year, and for the introduction of which, as of so many other choice plants, we are indebted to Dr. Moore. Calling at the gardens one evening last summer, while walking round with Dr. Moore, he asked, had we seen the new Œnothera? Being answered in the negative, he led the way to the lock-up garden or sanctum, where one is sure at all times to meet something new, very rare, or of much botanical interest. On this occasion, however, all else was forgotten in admiration of the lovely little transatlantic gem to which Dr. Moore introduced us. Looked at in the quiet stillness and shadows of a summer evening's close, with its circlet of large pure white flowers, raised vertically above the foliage, on long, slender tubes, and expanding their broad fair bosoms to the cooling moonbeams, this lovely plant presented an appearance altogether unique and striking.

This plant is altogether unique among its congeners as regards habit and appearance. The best of the latter, as for instance, Œ. Missourensis, Œ. Lamarkiana, etc., though showy as regards flowers, are of a gawky, straggling habit, which detracts much from their value. The plant to which we now direct attention is just the opposite, being single-stemmed, compact, and dwarf, flowering when not more than six inches high, and at the end of the season nearly doubling that height. But to come to particulars. The stem is short, stout, some eight or ten inches high; the leaves runcinate, having long foot stalks, which, together with the midrib, in the lower leaves are white, in the upper red or pinkish. Commencing at the base, the flowers issue in long succession from the axils of the leaves, and are elevated vertically over remarkably slender tubes fully a span in length, in a way to produce a beautiful effect. The flowers, as compared with the plant, are of great size, pure white, the limb of the corolla consisting of four very large obcordate petals, at the base of which the anthers are placed, round the mouth of the tube, which here expands considerably, and is of a greenish yellow color. The stigma is cruciform and considerably exserted. The above description, we are quite aware, is very imperfect, and conveys a still more imperfect idea of this fine flower. As yet, as far as we are aware, this Œnothera is without a specific name. It comes from the Territory of Utah, United States, and was communicated to Dr. Moore by his friend, M. Roezl, of Zurich. When we saw the plant at Glasnevin it promised to seed freely, and we hope ere long to see it widely distributed, and taking a prominent position in the choice herbaceous border, or cutting a figure in some phase of subtropical gardening, for which its dwarf habit and exotic appearance seem to render it eminently suitable.

AQUILEGIA LEPTOCERA LUTEA.—We can indorse what is said of the following in the *Garden*, as we saw it in flower in a garden near Philadelphia last summer. It is about two weeks after *Aquilegia canadensis* in blooming, and continues through most of the season:

"We are much pleased to notice the introduction of a new yellow flowered

Columbine (*Aquilegia leptocera lutea*), which is thus described in the catalogue of Messrs. Backhouse & Son, York, just received by us. 'This is unquestionably one of the finest perennials we ever introduced. Its large golden-yellow, long-spurred flowers are produced in great abundance from densely-tufted plants, which maintain a long succession of bloom. This species has not yet flowered with us; but magnificent dried specimens of the blossoms have been forwarded to us from North America. These are not unlike very large examples of *A. cœrulea*, with long straight horns. So far as we can ascertain, this plant has nothing whatever to do with *A. aurea* of Roezl, of which the flower is scarcely half the size, of a sulphur yellow shaded with green.'"

A New Style of Pansy.—The London *Journal of Horticulture* says: "M. E. Benary, a horticulturist at Erfurt, announces a new Pansy, which has large flowers of a splendid ultramarine blue, with a well-formed eye of very deep violet-purple. They are also of good substance, have strong stalks, and stand well above the leaves. M. Benary has named it "Viola tri-color, var. maxima Emperor William," and states that the variety reproduces itself with certainty from seed."

How to Water Plants.—From careful experiments, Mr. Mechi discovered that plants slightly watered every day often perish, and always become dwarfed; whereas a good soaking, given twice a week, almost invariably proved very beneficial. He says:

The sum of our experience in watering amounts to this—that thorough soaking of the ground two or three times a week is much better than the same amount of water applied in driblets daily, only sufficient to wet the upper surface, but not the under strata of earth contiguous to the roots. Cold spring water should, before applying it to a heated soil, be allowed to stand exposed to the sun and air for a few hours. The colder the water is, and the warmer the soil, so is the necessity of applying it in abundance; for it is evident, though we cannot explain it, that the result produced upon plants by applying cold water to the soil, when at a high temperature, unless so copiously applied as to saturate the soil completely, is fatal to tender or weakly plants, and often less or more injurious to strong or healthy ones.

Permanence of Orchard Grass.—A writer in the Philadelphia *Press* says: We have a field of it, on a strong, sandy loam, which has stood for more than thirty years. It has been cut for soiling; it has been cut for hay; it has been pastured; it was first sown with Red Clover and Timothy, which is long ago run out, and, although the White Clover and Blue-grass venture their presence to a limited extent among it, the Orchard-grass maintains its supremacy, and, breast-high at maturity, lords it over its diminutive trespassers in a bounteous crop, while its humbler attendants, good, in their place, modestly fill up a great nutritious undergrowth at the bottom. No grass which we have ever grown has yielded so heavy swath as this, nor one from which so much cattle-food to the acre can be grown, aside from Lucerne, which our American climates will not consecutively, year after year, produce.

Manganese and cobalt make a fine blue for coloring glass.

WORK FOR THE MONTH.

BY F. A. MILLER.

Most of the time of our fruit-growers will now be taken up in gathering fruit, in packing and shipping to the market, in preserving and drying, and in preparing for wine-making. Very little other work can be expected of them. In regard to picking and preparing fruit for market, but few seem to care in what condition it reaches their customers; and the result is, that, particularly in San Francisco, three-fourths of all the fruit received is of very inferior quality and in bad condition. Fruit-growers may imagine that this is immaterial to them, as long as they realize a fair profit; but I am inclined to believe that they are likely to be the greatest sufferers. It is true that some fruits have to be picked and shipped before they are fully ripe, in order to arrive at their destination in good condition; but this is now carried to extremes, fruit being offered for sale in this market which is positively unfit to eat. I noticed in particular this year, that Nectarines were of very poor quality on account of being gathered while green; they arrived here perfectly hard, and were allowed to soften on the stand, but their softening was only the result of decay. Such fruit must be unhealthy, and should not be allowed to be sold to consumers. If the law does not provide for a fruit-inspector, as it does for meat inspectors, it is certainly very deficient in this respect.

The same may be said in regard to Pears, Apples, and Plums. I saw during the first week of August, Bartlett Pears on most of our fruit-stands, which were absolutely unfit to eat. Most of the Plums, particularly the German Prunes, reach our market in green condition; and certainly these could be shipped after having almost completely ripened upon the trees. Let fruit-growers bear in mind that three times as much fruit would be consumed if the article was offered in good condition. While we have to deprive ourselves here of the great luxury of healthy and fine-flavored fruit, the grower suffers the greatest loss by not finding as good a market as might otherwise be obtained. I hope most sincerely that at least some of our intelligent fruit-growers will improve on their present system, and give us an opportunity to appreciate their products; until such is the case, many will do without fruits altogether.

In the vegetable garden, but very little is done in California throughout the summer months, the cause of which is the fact that vegetables of all kinds can be procured as cheaply and of excellent quality, much better in fact than I find are raised in our private gardens. However, it is pleasant and agreeable to have an opportunity of gathering from our own garden. This is a good time to plant Lettuce for autumn and winter use; also, a few Cabbages, Cauliflowers, Kale, and Black Radishes for winter use; also, Beets, Rutabagas, etc., are very desirable, and if planted now and taken care of for a month or two, will take care of themselves after the first winter rains, and be useful throughout the whole winter season.

The lawn requires particular care during the month of August, thorough watering and frequent cutting are very essential points in keeping the sod in good and uniform condition. Evergreen and deciduous ornamental trees outside of the lawn do not require any more irrigating now. The Cypress, Thujas, and Acacias may be brought into proper and uniform shape by clipping off the rank shoots which have

grown out of proportion. If compact and dense growth is desired, a general cutting back of the young growth will have the desired effect.

Roses have made their summer growth; cut the leading branches back, work up the soil around them, and their new growth will produce an abundance of flowers during autumn and winter in our mild climate.

Hyacinths and Tulips may be taken up and stored away in a dry, cool, and airy place until winter or spring, when they may be planted again.

Dahlias should receive thorough watering and a good hoeing, to produce perfect flowers; do not allow them to make much undergrowth or many side branches, or the flowers will be inferior.

Plant some Gladiolus bulbs for autumn flowering, and retain some for another planting in September or October for winter flowering.

Many of the Lilies have done flowering; if it is desirable to propagate them, let it be done now. This is done by taking off the sound scales and planting them in sandy soil, so that about one-third of the scales are covered with soil.

If Mignonette, Candytuft, Stocks, and Pansies are desired to bloom during autumn and winter, the seed should be sown during the latter part of August.

In the greenhouse all rooted cuttings should be potted in small pots, shaded for a few days and then placed close under glass. Hardy plants may be planted in the open ground, but this should be done carefully, as the young roots break very easily. Water well after planting, and if they can be shaded for a few days, it would be a help to them.

He who is never satisfied with others, may learn, if he chooses, that nobody s ever satisfied with him.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

There are every year complaints from many of the cultivators of fruits for the market, that they are not paid for the expense of raising them. There are often gluts in the market, also, which bring prices down to a very low figure. The cause of fruit-raising being unprofitable in the majority of cases, is, that the expenses of carriage from distant places is too great to afford a fair return in cash to the proprietors or renters of land. No doubt there is much truth in all this, but there are also other causes for failure in the objects sought. One reason is, that there are by far too many inferior varieties of fruits planted, and those which are good are not well managed afterward. The trees are improperly and unskilfully pruned, and their produce not sufficiently thinned out when the crops are heavy in order to permit those which are allowed to remain to attain superior quality.

Many persons recommend that canning establishments be erected for disposing of the great quantities of surplus fruit which can not be sold; but at present prices, taking into consideration the vast quantity of inferior fruit, the best remedy is not to raise any more of that poor fruit, to get rid of which it will be necessary to incur the expense of the canning or drying processes. If people can not raise such Peaches and Pears, or Apricots and Plums, as are marketable at a dollar a bushel, it will be better to cut the trees down and put in superior varieties, or something that can be made to pay better. Unless farmers and fruit-raisers mean to take sufficient pains to raise the best Peaches, Pears, Apricots, Plums, etc.—all large and

high-colored, and without any defects —then the most sagacious course is to grub the trees up. It costs no more to raise the best fruit than the most inferior, and it is the true policy to raise the finest fruits of all kinds, or else go out of the business altogether. Do not flood the market any longer with worthless fruit, which not only will not pay the cost of handling, but breaks down the price for good fruit.

There is this season an increased amount of small, inferior and juiceless Peaches on the market, which have to be sold at any price, however small; and great numbers of bushels have rotted; this can not be at all attributed to our dry climate. I would say to all cultivators of fruit, raise the kinds which will sell, and then send them to market in the most attractive shape. It is also highly important to deal fairly with one another. The top of every basket or box of fruit should be of the same quality with that in the interior, or on the bottom. If the whole basket is filled with small Peaches (if you send any small ones at all), by all means put small Peaches on top; if with fine Peaches, put fine ones on the top. Be strictly honest in packing. This will operate better in the end for both yourself, the commission merchant, and the customers. What right has any one to expect fair dealings from another, unless he himself deals fairly? If growers will cheat in putting up fruit in boxes or baskets, which do not contain what they seem to do, and want their commission man to cheat his customers, how can they expect him to be honest in dealing with them?

Owing to the exceptional coolness of the spring and summer, Raspberries have been in very much greater plenty, and for a longer term in market than for several years past. They are now, however, getting to be scarce (1st of August).

Blackberries are also holding out well this season, and for the same reason as the Raspberries. Many of this last fruit are picked too often before perfectly ripe. This will answer well enough when intended for stewing, but not for use in their natural state. They are wonderfully fine and productive in some of our coast valleys.

The Apricot season is just about closed. Fresh Figs are selling at from 20@25c. per pound; Smyrna, 25@35c. per pound.

Peaches are still in immense abundance—the majority rather small and inferior in quality.

Plums of several varieties are now coming forward in liberal quantities, and meet with ready sale for cooking, especially till they are riper.

Strawberries, as well as Raspberries and Blackberries, are prolonged in their yield on account of much cool weather, and, in consequence, some precipitation of moisture.

Red Currants are gone entirely. Common Apples and Pears are plentiful and cheap, but Bartlett and other choice Pears are commanding good prices.

Whortleberries, Black Currants, Mangoes, and Los Angeles and Sicily Lemons are out of season, and there are none to be had in the market.

Water-melons are rapidly increasing, and their price, of course, lowering. The same with Musk and Cantelope Melons.

Pomegranates are about 5 cents each. The market presents the usual display of tropical fruits (4th August).

Immense shipments of Tomatoes from Sacramento River and elsewhere, have most materially reduced prices. Green Corn from across the Bay is also much more plentiful and greatly lower. Ow-

ing to the abundance of nearly all sorts of fruits, Rhubarb meets with dull sale. Potatoes are low in price and of excellent mealy quality, generally. Our comparatively cool nights in California suit them well.

Green Okra has also declined, and is now quoted at 20@25c. per pound; Egg Plant is quotable at 6@10c. per bunch; Salsify, 10 cents per bunch; Artichokes, 25@35c. per dozen; Summer Squashes at 5c. per pound.

Editorial Gleanings.

Hardhack and Potentilla fruticosa.—Since the publication in the December report of Mr. T. S. Gold's remarks on *Potentilla fruticosa*, several correspondents have expressed their apprehension that he may have meant the *Spirea tomentosa*, which is well known throughout the eastern States as "Hardhack." This, however, was not the case, as Mr. Gold sent a specimen of the plant he alluded to, and it was the true *Potentilla fruticosa*, which seems also to have received the name of Hardhack in that part of the country. This illustrates the great difficulty which often arises in identifying any plant by the common or local name. Botanical names, although sometimes hard to learn, have the virtue of being precise, and of always and everywhere meaning the same plant.

In confirmation of Mr. Gold's statement that the *Potentilla fruticosa* was one of the most formidable weeds of that section, we publish the following from Mr. D. F. Smith, of Goshen, Connecticut.

"I have wondered whether the 'Hardhack' referred to by Mr. Gold is not a different shrub from that referred to by Mr. Beardslee, of Ohio, and others. I would say with all possible emphasis that what we in these western counties of Connecticut and Massachusetts know as 'Hardhack,' and which Mr. Gold identifies as *Potentilla fruticosa*, is a very great nuisance, having caused damage in this town, and in other single townships, that would require thousands of dollars to represent. Hundreds of acres in this town, that twenty-five years ago were good pasture land, have been rendered worthless by the rapid spread and dense growth of what we call 'Hardhack.'

"There need be no difficulty in discriminating between these two shrubs; the *Potentilla fruticosa* has pinnate leaves, and bright yellow flowers, while the *Spirea tomentosa* has single ovate or oblong leaves, and rose-colored or nearly white flowers. *Spirea tomentosa* is more erect and less branching, with the small flowers densely crowded into a spike which terminates the stalk."—*Monthly Report of Department of Agriculture.*

How I Strike Cuttings.—All "half-hardy" (as they are termed) bedding plants may at this season be struck with great facility without heat. I take a box of any convenient size, say one foot by one foot and a half, with a pane of glass to cover it. I cut down the sides and one end, so as to make it slope a little from back to front, so that water may run off. Having some fine sandy soil ready, I place in the box as much as will cover the bottom to a depth of three inches, leaving a space between the soil and the glass of three or four inches at the back. Should there happen to be no cracks in the bottom of the box, I bore a few gimlet holes, to allow the surplus water to drain away. Having smoothed the surface of the soil, I give it a gentle watering from a rose, and then prepare the cuttings in

the usual way. I prefer the points of healthy shoots that are not too gross, but rather under than over the medium of strength. I take off one or two pairs of the lowest leaves, and cut the end smooth immediately below a joint, leaving the cutting about two inches in length, working at only one variety at a time, and never keeping the cuttings exposed longer than necessary; indeed, if the weather is dry, I generally dip the foliage in water to prevent it from flagging. As soon as a batch is ready, I take some clean and dry sand and cover the surface of the soil to the depth of an eighth of an inch; this is a great safeguard against damping, which cuttings are liable to if the weather is dull, though not absolutely necessary. I then dibble in the cuttings thinly to the depth of half or three-quarters of an inch, making them firm: give a gentle watering, put a label with the name to them, and cover them up till the next batch is ready, proceeding in a similar manner until the box is filled. I place the box in a greenhouse, a frame, or even in a sheltered place out of doors, shading carefully all day, more especially in dry, sunny weather. I take off the glass and examine the cuttings every morning and evening, removing all decaying leaves or cuttings that have failed, and gently sprinkling with water to prevent flagging, though if the weather should be dull, very little is required. When the cuttings have begun to form a callus, the shading is made daily less, and, as they progress, air is given and increased by degrees, to prevent them from becoming drawn. When fairly rooted I dig them carefully out, and put each into a small pot; otherwise I gradually harden them off, until they can bear full exposure, and leave them in the boxes until spring, when they are transferred directly to their places in the flower garden. In this manner I strike more sorts of plants than I can at present remember, including fuchsias, verbenas, petunias, shrubby calceolarias, ageratums, salvias, and, in fact, all kinds of soft-wooded plants. —*Gardeners' Chronicle.*

Alfalfa as Hog Feed.—There is no doubt as regards the adaptability of alfalfa, in its green state, to the successful feeding of swine. Old and young alike are fond of it; and with little or no other vegetable food, can be kept in a fine growing condition till they have attained to full size; but to fatten them for the butcher requires a more oily or saccharine food. In feeding with alfalfa exclusively or nearly so, it must be borne in mind, that if it is intended to continue the field to alfalfa the following year, every hog must have a ring in the nose, or every root of alfalfa will be rooted out and eaten. The animal seems to be even more fond of the root than the top, and will do heavy work to get it, rooting the ground completely into a condition of perfect pulverization and to a greater depth than plow and harrow can go. It is, therefore, one of the best fallow crops that can be given to the land, and should have its place and year, in all systems of rotation in a climate like ours, allowing the hogs to eat and root their very best. It would simply surprise some of our hog-growers to see how easily five hundred animals, old and young, can be kept in a perfectly thriving condition on a few acres of alfalfa on suitable ground; and we would recommend a trial of the same as worthy their attention, always bearing in mind the necessity of an abundance of pure water accessible to the herd at all times.—*Exchange.*

The Thermometer.—The thermometer, or heat-measurer (from the two Greek words, *therme*, heat, and *metron*, a measure), varies considerably in different latitudes and altitudes. Zero, according to Fahrenheit, who never had the opportunity of experiencing an extra severe climate, was supposed to be the coldest point the mercury could show; but the experiments of Celsius, Reaumur, and other thermometrical *savants*, have shown that the quicksilver can be forced to fall thirty-nine degrees still lower, and that then it freezes. The thermometer being affected by the altitude of the place, the radiation of solar rays, the "lightness of the air," or the density, so to speak, of "the blanket of the atmosphere," it follows that so many degrees above or below zero, in Denver, for instance, is merely a relative indication of the heat or cold indicated by the same rise or fall in Black Hawk or Empire. The temperature being the same, the thermometer falls 20° for every mile of elevation. Hence, though that ingenious instrument indicated 23° below zero one morning last winter in Central, it shouldn't follow philosophically that it was, abstractly speaking, colder there than at the same time here, when our thermometer indicated a much higher figure.—*Exchange.*

Minnesota Wild Rice.—In many of the lakes of Northern Minnesota, and in the marshes at the head waters of the Mississippi, there are extensive beds of wild Rice. The Indians have long been in the habit of gathering it for use as food; taking their canoes into the Rice swamps when the grain was ripe, and beating it out with their paddles until the canoes were loaded. The Rice is about as valuable as that of the East Indies, and not so good as that of the Carolinas. Whether it will ever be profitable to turn these wild Rice fields into use, or to reclaim them for cultivation or not, is a question that can not be decided at present; but while Rice is worth 7 cents a pound, and the Southern fields are so full of malaria of so deadly a character as to prohibit white men from inhabiting them, it would seem as though these fresh fields of the North, so salubrious and so convenient of access, were worth at least an attempt at reclamation.—*N. Y. Tribune.*

The Largest Farm in England.—The largest farm in England consists of 3,000 acres, and belongs to a man with the Yankee name of Samuel Jones. In its cultivation he follows the "four-course" system, the whole extent of the farm being divided into four great crops: 750 acres to wheat, 750 to barley and oats, 750 to seeds, beans, peas, etc., and 750 to roots. His live stock is valued as follows: Sheep, $35,000; horses, $15,000; bullocks, $12,000; pigs, $2,500. The oil cake and corn produced annually amount to $20,000, and artificial fertilizers about $8,000. The entire cost of manure in various forms, used annually, is about $15,000. Sheep are claimed as the most profitable stock he keeps, and from them are realized about $20,000.—*Exchange.*

The Jerseys.—The island of Jersey has 12,000 head of horned stock (all "Jerseys,") which is about one to every two acres of agricultural land. The farms of the island rarely exceed 40 acres, and the feed of the cattle is mainly roots and grass, with some straw in winter. The prosperity of the Jersey farmers is said to be unequaled, in the same class, either in Europe or America.

Remedy for the Mildew on Vines.—A correspondent of a leading English horticultural work writes: "I read, a short time since, in a popular periodical, that 'irrigating the vine with dilute bisulphate of lime is a simple and complete remedy for the vine disease' (mildew). Is this so? And in what way, and in what quantity and proportions, ought the solution to be applied? My vines are completely conquered by mildew in spite of sulphur liberally applied. In 1870 I had very few bunches, although in former years I had good crops; and last year, 1872, I had not a grape. Leaves, stems, fruit, and all, were all eaten into and destroyed by the mildew. What can I do?" If by bisulphate of lime be intended the liquor made by boiling lime and sulphur together, we should think it a very dangerous application to a living plant; but, whatever the preparation intended is, it could have no effect on the vine-mildew if applied to the roots of a vine. The vine-mildew is a fungus attacking the leaves and stems of the vine, and the remedy must be applied to the parts affected. The spores of this fungus may be considered as everywhere present, but it is only when they meet with favorable conditions that they flourish. There is little doubt that a cold and damp atmosphere is one of these. But a vine out of health, like an unhealthy animal, is predisposed to the attacks of parasites, both animal and fungoid. As 1870 was a hot and dry season, it is probable that R. E.'s vines suffered from want of water, a very common cause of mildew; though the opposite—as cold, wet borders—by weakening the constitution of the vine, will render it liable to be attacked. After the vines are pruned, let them be dressed with sulphur, clay, and a little soft soap (4 oz. to the gallon of water will be enough of the latter), using soft water to mix them with. Let this be used of the thickness of thin paint, so as to cover the bark well over. As soon as the foliage appears next season, dust it well with sulphur, not waiting till mildew is seen before applying it; and repeat this application several times during the season, giving plenty of air, but keeping a warm, growing temperature. Before the vine-mildew is apparent to the unassisted eye, the foliage of the vine may be seriously injured, and the microscope will show the under side of a leaf covered by the mycelium of the fungus before its presence has been suspected. We use a machine, on the principle of a winnowing-machine, to dust a fine cloud over the vines when in a damp state; though every part is dusted, the quantity of sulphur is so small that it is hardly perceived. This is the only known remedy, and is always effectual. —*Exchange.*

M. Loiseau recommends that the usual method for striking cuttings should be altered. When, he observes, a cutting is put in perpendicularly, the sap, the natural tendency of which is to rise, is expended in pushing forward a new bud instead of forming a root. But if a cutting is laid horizontally, or even with its lower end higher than the upper, that is not the case; the sap prefers to move toward the higher end, or at all events is evenly distributed between the two extremities. This causes the callus to form so rapidly, that if the cuttings are put into a warm place eight or ten days are enough to secure its formation, or even that of the roots. Autumn cuttings taken off a little before the sap ceases to move, and treated in this manner, form the callus so quickly that they are ready for planting out before winter. In winter it is nec-

essary to put in cuttings in a gentle heat, or beneath leaves deep enough to keep off frost, and even then a callus will be found to have formed by spring time.—*Gardeners' Chronicle.*

A BARREL of flour weighs one hundred and ninety-six pounds; a barrel of rice, six hundred pounds; a keg of powder, twenty-five pounds; a firkin of butter, fifty-six pounds; a tub of butter, eighty-four pounds. The following are sold by weight, per bushel: Wheat, beans, and clover-seed, sixty pounds; corn, rye, and flaxseed, fifty-five pounds; buckwheat, fifty-two pounds; barley, forty-eight pounds; coarse salt, eighty-five pounds.—*Exchange.*

A NEW FODDER.—We want new grasses in California now that irrigation is beginning to interest us. They are now introducing into Great Britain what is called the prickly comfrey, a native grass of the Caucasus. It yields, in several cuttings, thirty tons to the acre. The grass is propagated from the roots and is perennial. Cattle eat it readily and thrive upon it. There is reason to believe that it will suit our climate.

FOR PRESERVING GARDEN STAKES.—A correspondent of the *Country Gentleman* considers the following the best way for preserving garden stakes made of pine: Boil the parts which are to be set in the ground for a short time in water to which blue vitriol has been added in the proportion of two pounds to the gallon. After long use they will be found as sound as the day they were made, while other stakes prepared with coal tar have failed.

ANT'S NESTS IN GARDENS.—F. M. G., in *Nature*, says: I have found a very effectual remedy for the annoyance of ants nesting in the garden paths and borders. A strong solution of carbolic acid and water poured into the holes, kills all the ants it touches, and the survivors immediately take themselves off. Care must be taken in its use, as it destroys animal and vegetable as well as insect life.

A SUBSTITUTE FOR GLASS.—Take equal parts of ale and linseed oil and four ounces of white resin (mix some sugar of lead with some of the oil), then mix the whole together, and wash plain calico with the composition, it will be found to resist the action of the weather for a long time.

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING JULY 31ST, 1873.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 508 Battery Street (opposite the Custom-house.)

BAROMETER.

Mean height at	9 A.M.	30.06 in.
do	12 M.	30.06
do	3 P.M.	30.05
do	6 P.M.	30.04
Greatest height, on the 24th at	9 A.M.	30.17
Least height, on the 1st at	6 P.M.	29.86

THERMOMETER.

(In the shade and free from reflected heat.)

Mean height at	9 A.M.	58°
do	12 M.	64°
do	3 P.M.	64°
do	6 P.M.	60°
Greatest height, on the 26th at	12 M.	75°
Least height, on the 11th at	9 A.M.	54°

SELF-REGISTERING THERMOMETER.

Mean height during the night	44°
Greatest height, on night of 15th	48°
Least height, on night of 1st	38°

WINDS.

North and north-west on 3 days; south and south-west on 9 days; west on 19 days.

WEATHER.

Clear on 10 days; variable on 16 days; cloudy on 5 days.

RAIN GAUGE.

July 22d	0.02 inches.
July 28th	0.01 "
Total	0.03 "

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. SEPTEMBER, 1873. No. 9.

LILY OF THE VALLEY—(CONVALLARIA).

BY F. A. MILLER.

"The Lily of the Valley" is one of those popular tuberous-rooted plants which are so rarely met with in our gardens or conservatories, and in almost all cases where its cultivation has been undertaken on this coast, it proved a failure. This is not very encouraging, and the question arises, what has been the cause of this want of success? To cultivate the Lily of the Valley in the open air may present difficulties which are not easily overcome, but I see no reason why we should not have them in our conservatories in their full glory.

The Lily of the Valley in its native country grows under the shade of trees, in the woods and forests, and produces its beautiful white bells in the month of May, filling the air with its delightful fragrance. The weather then is mild and warm, the atmosphere is filled with moisture, in just such a climate as we experience in California during our pleasant winter months; and this is an indication that even in the open air, in sheltered and shady places, the Lily of the Valley could be grown successfully with us. The greatest mistakes have been made in not giving it a proper place, and in expecting too much of the young and weak roots which have been from time to time imported, and have arrived here in a very doubtful condition.

In Europe, the Lily of the Valley is offered in the market in two different conditions: in clumps and in buds. The strongest roots, of course, are the so-called clumps, which are rarely brought to this coast. These would undoubtedly do much better here for out-of-door culture, if proper shelter, shade, and moisture were given to them; while the buds would answer the purpose of conservatory culture.

We generally receive the roots from abroad in autumn, and if they are intended for the conservatory, greenhouse, or window, I would suggest the following points for observation. In purchasing buds, select those which present a full and roundish top or sprout, as these only can be expected to flower during the coming season. Five or six of these may be planted in one five or six inch pot. If pots can be obtained of more than ordinary depth they will be preferable. The soil should be of a light and porous nature, otherwise its quality does not matter much; the best and most convenient soil would

be two-thirds of light and sandy loam and one-third of old manure and leaf mold. Plant the roots deep enough to cover the tops with soil. Water them well, and then sink the pots up to the rim in a shady and sheltered place in the open air; if the pots can be sunk in sand it will answer the purpose best. Over the surface place a thick layer of moss, which is apt to keep the roots warmer and also retain the moisture without being compelled to water frequently; a light sprinkling once a week will keep the roots sufficiently moist. As soon as the young shoots make their appearance, those which are expected to flower first may be taken into the conservatory or into the house. The growth and development of the plants may now be much encouraged by placing a flower-pot loosely filled with moss up-side down, over each, and closing up the hole. In about three weeks, the covering pots should be removed. The foliage will present a yellow appearance, but on being exposed to the light will soon attain its fresh green color. In four to six weeks the Lily of the Valley will have produced its charming flowers. The plants while growing should be placed close to or under the glass, kept well shaded, and liberally supplied with water.

Clumps of the Lily of the Valley may be treated similarly, if used for conservatory or window culture, but if intended for the open ground, they should be planted at once in a warm, sheltered, and shady place, and the surface covered with a layer of moss. Throughout the mild regions of California they may be expected to flower in the open air in March and April.

There are now several varieties of the Lily of the Valley under cultivation. The oldest and most popular is the *Convallaria majalis*, (Maiblume, May-lily), a native of Germany; of this, the following varieties are known:

Conv. maj., *flore pleno*, producing double flowers.

Conv. maj., *var. alba marginata*, the foliage of which is bordered with white.

Conv. maj., *flore roseo*, with rose-colored flowers, single.

Conv. maj., *flore roseo pleno*, same as above, but the flowers are double.

We also hear of the *Conv. multiflora*, a taller and more shrubby-growing species.

Conv. polygonatum (Solomon's Seal), similar in habit to the former.

By following the above method for the greenhouse culture of the Lily of the Valley, it may be had in bloom at almost any time during our winter months. All the varieties may be treated alike, and plunged in the open ground, and can then be taken into the house in succession, as they are required. After flowering, they may be put out of the way under the shelves of the greenhouse, or in a shady place in the garden, where they will not require any further attention until they are wanted again the coming year.

HOW TO GROW POND LILIES.

A Reading, Pennsylvania, lady gave the following directions for growing the white Water Lily — the common Pond Lily of our small inland lakes:

The roots, having been procured in the fall, were kept damp during the winter in flower-pots. In the spring a tub was made by sawing a substantial barrel in two; this was set on brick feet, out of doors, and one-third filled with garden soil, sand, and well rotted manure. The roots were planted in this mixture and covered. Water was added in small quantities, and at intervals of a

day or two—but so gently as not to disturb the earth—until the tub was full. Very soon the handsome round leaves, four or five inches in diameter, made their appearance and filled the tub. The loss of water by evaporation was made good from time to time, and ere long the blossoms appeared, delighting everyone with their beauty.

When winter approached, the water was allowed to dry off almost entirely, and the tub and contents put into the cellar and watered at long intervals. In the spring, the roots were separated, and about half the increase returned to the same tub, in a fresh mixture of earth.

They were brought out earlier than before (about April 1), and blossomed more profusely. The flowers were as perfect as the Camellia, and delightfully fragrant; closing at night and re-opening in the morning, as is the habit of Water Lilies. The blooms were about two inches in diameter—not quite as large as some of the specimens in the pond from which the roots were taken, but equally beautiful and fragrant.

But, unless nurserymen can supply orders for the roots of this lily, it would be interesting to those proposing to cultivate it to know how to get a supply of the stock. They grow generally in deep water, where only amphibious creatures can be expected to operate; while to build a coffer-dam on purpose to get the roots would hardly pay. Who can suggest a way for surmounting these practical difficulties?

It is stated that by a careful analysis it has been found that apples contain a larger amount of phosphorus, or brain food, than any other fruit or vegetable, and on this account they are very important to sedentary men, who work their brains rather than their muscles. They also contain the acids which are in need every day, especially for sedentary men, the action of whose liver is sluggish, to eliminate effete matters, which, if retained in the system, produce inaction of the brain, and, indeed, of the whole system, causing jaundice, sleepiness, scurvy, and troublesome diseases of the skin.

WEEDS.

[Continued from page 237.]

Much attention has been paid to the distribution of plants in various countries, and let me cite one place of study, because the facts are interesting, as showing how hard it is to actually eradicate weeds, and also how slowly changes sometimes take place in them.

At Montpelier, in South France, there is an old university, and nearly 300 years ago a botanic garden was founded. From that time to this, it has been a place where plants have been studied, both in the gardens and in the fields. It was then an old region; that is, it had been in cultivation for many centuries. Catalogues of all the plants found in the vicinity, good, bad, and indifferent, were made out. Successive botanists have studied and written on the matter. The great Linnæus went there to botanize. So the ground has been gone over again and again, and the plants noted. The present professor of botany there has, within a few years, examined it over again, and published the results. Each century there were efforts to bring in new plants. In the seventeenth, many were planted; again in the eighteenth century, again in this. Two botanists have left records of 900 foreign species that were planted in the places where it was believed they might

live without man's care. But it can not be seen that a single one of the whole 900 grows there without man's care and cultivation.

Then, again, many plants are cultivated in the botanic garden. Have any of these escaped cultivation? Very few, indeed. Some grew for a time as weeds, within the grounds, and two or three species became naturalized outside, but none of them as troublesome weeds.

Again; in the vicinity there is a port in the Mediterranean where foreign wools are washed and dried. The drying grounds where the wool is spread have been watched by the botanists for more than half a century. The total number of foreign plants coming up there from seeds brought in the wool amounts to 468 kinds. They came from Europe, Asia, Africa, Australia, and both the Americas. Of all this number, only one has become established, and I do not understand that it is troublesome, yet many of them were weeds where the sheep originally pastured.

Weeds of cultivation, as they are called, exist there, as they do everywhere; but they are mostly of the kinds that have been there from very ancient times. Of those known three centuries ago, not one is extinct there now. Man has fought them for that time—is fighting them still, but they are not *eradicated*. Checked they may be, but they are not exterminated. Five species of plants have become extinct, but none were *weeds*. And what have been the additions during this time? These are limited to six species; five of them from America are common now in the vineyards round about the place. Here we have a land, cultivated continuously since the days of the old Roman Empire. All these centuries man has been fighting weeds—hoeing, pulling, weeding, in that land of vineyards; and for three hundred years, at least, he has not absolutely exterminated a single noxious weed. Their relative numbers may have changed, but he is still bravely fighting the same foes that his ancestors have fought all these many generations. He may subdue them, but not entirely conquer them. And, in the meantime, a few fresh ones have been added to his fields, to give him more variety.

I have seen other cases where certain foreign weeds were established slowly, or at least spread slowly.

I have seen weeds near Mannheim, in western Germany, left by the Russian army in 1812–13, where they followed Napoleon in his famous retreat. I visited the locality forty-three years later; the Cossack weeds were there still, but had not spread widely. Not so, however, here. Since I have been to this meeting, I have heard that the Ox-eyed Daisy was left in this (Fairfield) county by the British soldiers in the Revolution, and here it will doubtless remain as long as the republic lasts, perhaps longer. And usually, if a foreign weed spreads at all, it spreads rapidly.

Egypt, a land cultivated we know not how long, has its old weeds. It is probable that the Egyptians of to-day are fighting some of the same species that the children of Israel had to dig and pull before the days of Moses, and which Egyptian slaves cursed even earlier.

Put Agreements in Writing.—How many misunderstandings arise from the loose ways in which business matters are talked over, and when each party puts his own construction on the conversation, the matter is dismissed by each, with the words: "All right; all right." Frequently it turns out all wrong, and becomes a question for lawyers and the courts. More than three-

fourths of the litigation of the country would be saved if people would put down their agreements in writing and sign their names to it. Each word in our language has its peculiar meaning, and memory may, by the change of its position in the sentence, convey an entirely different idea from that intended. When once reduced to writing, ideas are fixed, and expensive lawsuits are saved.—*American Rural Home.*

FORM AND OUTLINE OF CERTAIN OLD TREES, SHRUBS, EVERGREENS, ETC.

BY E. J. HOOPER.

Without presuming to rival the powers of the painter, perhaps it may not be altogether inappropriate in the HORTICULTURIST to point out the peculiar character possessed by some of our old trees, evergreens, shrubs, etc., with reference to their aptitude or eligibility for adorning parks, ornamental grounds, etc., as we commonly find them.

First, then, of the Cedar of Lebanon, and the Yew (whose character of growth is somewhat similar); neither of them shrubs, however, but real trees. What style and outline! What words can express them. Dignified, massive, graceful! How important these trees anywhere; but more especially in burial grounds, and in the vicinity of architectural structures. Then again, by way of contrast, let us look at the old Lombardy Poplar. I am aware that painters do not scatter the form of this tree (as some do similar forms of the *Eucalypti* tribe) over their canvas at random; but, there are cases when, for the sake of powerful contrast, they are fain to seek its aid. But we must recollect that we can not be confined strictly to the laws of painting, in making comparisons, however correct the principles. We must remember this one thing—all important—that we can not walk "in and out, and round about," as the poet says; we can not walk about the picture or painting as we walk about the pleasure-ground, every step bringing fresh associations and aspects; and surely this is a reason for departing occasionally from the painter's ideas. This, indeed, is an important consideration at all times; and thus we find that persons imbued with good taste and some experience do not choose to judge from one point of view, nor yet even from a second; but pace up and down, considering the bearing of this or that feature from various points of view. Although the Lombardy Poplar, and like shaped trees, as used for contrast of form against the flat or horizontal lines of the Yew and Cedar of Lebanon, are of much value, yet they are meddlers with landscape, and can not be allowed to spring up anywhere. They need placing, if we may so term it.

Let us consider the old Holly, of time-honored memory. Setting aside Christmas associations, as chiefly observed in Europe and in the eastern part of the United States, what a fine thing a well-grown, good-sized Holly-tree is—or a large Holly-bush, if you will. Most of my eastern readers, at least, have seen a huge woodland Holly; bold in outline, massive, dark, and rich—a match for the most imperious storm. We want time in California for such things. On seeing such, we feel assured that a century would be no particular consideration with such a fine old fellow. And of what importance in our parks, cemeteries and shrubberies are trees and shrubs of such character of growth and thick, glossy foliage. Take, indeed, the Holly and its associate form in many other trees

and evergreens, from the pleasure-grounds of both Europe and America, and one-half their dignity is destroyed at once.

Another fine and most elegant evergreen I may point to — the Hemlock Spruce, or *Abies Canadensis*. No tree can boast of more grace and elegance than this; it is one huge waving plume, from the summit to the very turf. It delights in a rather naturally damp, and partially, if possible, shaded situation, and loves a soil somewhat unctuous and adhesive — if of a dark character, so much the better. Fortunately, in California, we have some fine Australian and other evergreens of this nature and shape, in some respects.

The Deciduous Cypress, too, is a most elegant tree, when in foliage, although when in a leaf-denuded state it is a most pitiful affair; but there is an airy elegance about the foliage which not many other shrubs possess. It is more like some Tree-fern than any other shrub. And the old Stag's-horn Sumach is a fine figure of a tree, when it has attained any size. The foliage is boldly pinnated, and the marking of the whole outline very sharp and lively. The blossom, moreover, has a very handsome effect; of a dull, rather deep red; and it is a free bloomer when comparatively young.

The Red Cedar is a fine tree, of the spiry, or what may, perhaps, be called the columnar class. I have seen them more than thirty feet in height, clothed from the soil to the summit, and as compact as a column. A finer object can scarcely be seen. Our young Giant Sequoias, wherever they have space, are assuming this shape and appearance, but their foliage is not quite so dense.

The old China Arbor-vitæ has a most dignified effect when it attains some size, and is grown compact. The Ilex is a tree of very grave, sombre, and massive appearance, and it succeeds well in California — as what does not? There are no hard winters here to break up its character, if not totally to destroy it. Neither has the Red Cedar, nor the Ilex, nor, in fact, any other of our numerous hardy or tender evergreens in this State, any snows, except in the high mountains, to make sad havoc with them when they get old, as they do in the East.

The Deodar is a tree which is now, like many others, becoming thoroughly domesticated among us. Few gardens but possess Deodars. To speak of its extreme gracefulness is almost superfluous; it is praised by all. It may not possess the stern dignity of the Cedar of Lebanon; it has, however, such intrinsic merits, irrespective of all associations, that it may claim a kind of pre-eminence on that score alone. Only observe what sharp etchings it produces as a sky-line. What other tree can give the same effect?

Another class of plants I would here point to, as of much importance in ornamental scenery. I mean the Yucca family. The *Yucca gloriosa* is, perhaps, the most highly esteemed; and a finer object when in blossom can hardly be conceived. It is majestic, bold, and even grand. The Irish Yew is another most distinct and significant tree, wherever stiff formality or deep contrast is desired. And then its color is so good; perhaps one of the darkest shades of green we possess.

It is a strange affair that the Sycamore, which, when young, is the most common-place tree imaginable, should, when old, become so very picturesque. When young it is a mere lean stripling; but as it attains age it becomes gathered in bold masses, and the general

outline carries most marked indentations. But the same may be said of the Scotch Fir, and indeed of some other trees.

Many more trees might be pointed out, but space will not permit. But if some of our old shrubs, evergreens, and trees will bear high commendations, what shall we say of all the new accessions to our list in California from all parts of the world, and nearly all doing admirably well? Look at the Conifers alone — a host in themselves. But I do not think it invidious to mix up these older acquaintances with modern introductions. I would fain have their due meed of merit awarded to them, and that, too, in the very presence of their most formidable rivals, who, no doubt, want to push them off their pedestals.

If the reader wishes to see specimens of many fine and various shrubs and evergreens, both native and foreign, of excellent forms, in fine health and well-grown, I would direct his attention to the public grounds of Mr. R. Nolan, and Mr. W. F. Kelsey, in Oakland, and the private garden of Mr. James Otis, Sutter Street, San Francisco.

HEDGES, OR LIVE FENCES.

Many species of plants have been pressed into the service, to do duty as apologies for hedge-rows in small as well as around large gardens in the colony, and not a few attempts have resulted in utter failure, while numerous instances of very partial success occasionally meet the eye in suburban as well as in more remote districts. But where can one see anything approaching to the luxuriant and well-kept hedges of old England? Does not the Hawthorn thrive in this climate splendidly, and grow luxuriantly, with its white pearly blossoms and its fragrant perfume? First and foremost, then, may be placed the White Thorn as a popular hedge-plant; it stands without a rival for such a purpose, and requires cutting only once a year, whereas other substitutes need no end of attention — such as the *Acacia lophantha*, which impoverishes the soil wherever it is planted. *Acacia armata*, or prickly Acacia, has been largely patronized, but it has a tendency to get patchy and bare, and now presents a very sorrowful aspect around many a country and suburban garden. The Arbor-vitæ, when duly attended to, does much better. The New Zealand *Pittosporum eugeniodes* forms a very beautiful garden hedge, and bears clipping remarkably well. The various kinds of Cypress, such as *erecta*, *torulosa*, *horizontalis*, and *Lambertiana*, as well as the Olive and Ceanothus, have all been used with more or less success, according as attention has been bestowed upon their cultivation. The common Furze forms a capital live fence, but as it gets very dry, and susceptible of easy ignition when a little old, it is rather a dangerous subject to deal with in this hot climate. Then there are the Privets, deciduous and evergreen, which make a very beautiful and ornamental fence; the Cape and Prickly Broom are also used for such a purpose, as well as the Chinese *Enonymus japonicas*, and *variegatas*, which also stand clipping well. The famous Osage Orange (*Maclura aurantiaca*) and *Gleditschia*, both from America, form fine strong hedges — many preferring the former to the Hawthorn. Certainly the Osage Orange makes a very substantial fence. *Bursaria spinosa*, a native of this colony, which flowers in January, is a very pretty ornamental shrub, and adapted for a garden hedge.

As already stated, however, there is

no plant like the Thorn so suitable for forming a hedge, and not only for small gardens, but boundary fences for fields, and forest plantations. It takes well with richly prepared soil, and amply repays any extra labor in the due preparation of the ground for their reception, which ought to be well trenched, and incorporated with a good supply of well decomposed manure. Any quantity of young seedlings can be obtained at the nurseries, but three-year-olds, twice transplanted, having fibrous roots, may be relied on as very satisfactory. When put in about six inches apart in the hedge-row, and headed down to within two inches from the ground, the following season numerous shoots will have burst forth. The erect mode of planting is preferable to the horizontal method, so commonly pursued in the old country. For a couple of years the plants may be left to their natural growth, but the third season brings round the trimming process, which may then afterward be pursued according as the will of the practitioner may suggest.

The most usual form adopted is the wedge shape, being by far much more easily performed with the hedge-bill than the other modes that sometimes find favor. It is of paramount importance, in order to be successful, to see that the ground is always kept in good order on either side of the hedge. In former times, the blooming Hawthorn was suspended from every English door on the first morning of May, being brought in from the woods with much ceremonial pomp; but, as such a custom had its origin in the superstitious rites that the heathen paid to Flora, our reforming forefathers almost "stamped out" May gatherings, and other kindred sports, then so popular among the people. —*Australian Town and Country.*

THE COCKSPUR THORN.

Englishmen who settle in this country naturally wish to have Hawthorn hedges, and those of our countrymen who have seen the "quick" hedges abroad, or have read of their beauty, become inpressed with the idea that the Hawthorn is the proper hedge-plant. When these enthusiasts try the Hawthorn hedge they are sadly disappointed. It puts out its leaves late and drops them early; under our hot suns the leaves soon get a burnt and rusty appearance; and worst of all, they find the hedge attacked by all the insects that infest the Apple, Pear, and related trees. In our climate the Hawthorn—so identified with English rural scenery, and so interwoven through English literature—is practically useless. We are far from commending any Thorn as a hedge-plant, but there is no one of the large genus so well adapted to the use as the Cockspur Thorn. This is an indigenous shrub or small tree, found from Canada to the Gulf, and extending west of the Mississippi. As ordinarily met with, it is a shrub, but under favorable conditions it forms a handsome round-headed tree fifteen or twenty feet high. It is distinguished from other species by the exceeding neatness of its habit. The leaves are obovate—broadest toward the extremity—varying considerably in shape, serrated on the edges except near the base, very thick, bright and shiny above, and conspicuously veined below. The flowers are in clusters of from two to six in a simple corymb, and are larger than in most of our native species. They are succeeded by a small bright red fruit. The thorns of this species are slender, and from two to two and a half inches long. There are several native forms that have received names as species from the ear-

lier botanists, and a number of garden varieties have been produced in Europe, some of which are only about two feet high. While we do not advise the use of this or any other Thorn as a hedge-plant, we can commend it as an ornamental shrub or tree, and it bears clipping as well as the other species. As is the case with other native and foreign Thorns, the seeds of this do not germinate until the second year.—*American Agriculturist.*

ODORS OF FLOWERS.

Much of the importance attached to flowers by people generally, says the *Pacific Rural Press*, is owing to the odors they exhale. The Rose has long been cultivated by amateurs, no less for its grateful fragrance than for its beauties of form and color; and those which combine these qualities are the favored objects of the florist's care. The cause of the odors of plants is, no doubt, the disengagement of a volatile oil, which, in some cases, is easily obtained, and made subservient to the use of man; in others it entirely eludes every effort to confine or preserve it, being as evanescent as light, which is the agent of its production.

No one can go into the country in those places where vegetation of many kinds is abundant, without having the olfactory nerves excited and refreshed by the odors of thousands of plants, leaves and flowers. These odors are considered most health-bearing, and full of ozone. This is like continually inhaling the scents of a colossal and natural bouquet. The fragrance is all around us. We enjoyed this especially lately, in a visit back of Saucelito about nine miles, near the ocean, in Marin County.

Odors are distinguished into *permanent*, *fugitive*, and *intermittent*. *Permanent odors* are such as are inclosed in the tissue of the wood and bark of plants in a concentrated form; and, either from being slightly volatile, or contained in close vessels which prevent exhalation, they remain for a long time, giving to the organs in which they are contained their peculiar odor. There is, probably, no part of a vegetable absolutely destitute of permanent odor. Every variety of wood, under certain circumstances, exhibits it. We found this nearly general in smelling the specimens of Dr. Stivers' collections of the woods of the coast, as well as his foreign specimens. Some of these woods, nearly scentless otherwise, become strongly odorous when rubbed or heated. The Pine, Oak, Redwood, Beech, and Cedar, are striking examples of this kind. Others are odorous for a long time after being cut, under ordinary circumstances; of this kind are the Rosewood of Teneriffe, the Cedar, and Sandalwood (*Santalum Album*) of India, so highly esteemed in Eastern Asia for its fragrance. The slight volatility of the oil to which these species owe their odors, and the compactness of the wood, enable them constantly to yield their fragrance for an indefinite length of time.

Most visitors to this coast notice how remarkable and pleasant are the odors of the wood with which the cases of libraries, etc., are made.

Some woods are fragrant when first cut, but lose this property in a very short time, as is the case with Cinnamon and Cassia, the fragrant substances being volatile and the wood porous; both causes concurring to render the wood in a short time scentless.

Fugitive odors are such as belong to organs of short duration, as the leaves and flowers. We have been in the

South during the season of the bloom of Magnolias, when the woods and swamps were perfumed by the odor of their flowers. This odor is but little during the direct action of the midday sun, but at sunset, when there is dew, the air is loaded with their fragrance. A shower produces similar effects.

Intermittent odors are such as are given off at particular times; and the plants which yield them are entirely destitute of such odors at other times. Many *Orchidaciæ* are perfectly scentless during the day, but during the night are fragrant. A remarkable example of this class of odors is exhibited by the *Cacalia septentriolis*, which, it is said, emits a strong aromatic odor only when the sun shines. The Night-blooming Cereus gives out flashes or puffs of perfume, as its intermittent odors are called. Many other cases we might cite of similar singular phenomena, which would properly come under this head.

Odors have been classed, from their similarity of effect on the human system, into aromatic, stimulating, penetrating, and sweet, but the difficulty of fixing definite limits to the application of these terms renders the classification of little use.

It is observed that white flowers are most odoriferous and agreeable, the yellow and brown most disagreeable.

Ammonia for Verbenas.—The sulphate of ammonia is an excellent manurial liquid to apply to Verbenas, or any other flower, giving to the foliage a dark green, luxuriant and healthy appearance. It is economical, clean, and easily applied. Prepare it in the evening before using, by dissolving one ounce of ammonia in two gallons of water. It may be applied once a week.

Indigo Culture.—Indigo was once a most important crop in South Carolina, and proved equally prolific in Louisiana. Enough might undoubtedly be raised in the United States to supply the home market. Some Indigo produced at Baton Rouge was pronounced to have been equal to the best Caraccas, which sells at one dollar per pound, and experience has proved that one acre of ground there will yield sixty pounds; that it requires only from July to October for cultivating it, and that there is not connected with it one-third of the expense or time that is generally required for the cultivation of Cotton.

The plant is somewhat like a fern when grown, and when young is hardly distinguishable from the lucerne grass; its leaves in general are pinnated, and terminated by a single lobe; the flowers consist of five leaves, and are of the papilonaceous kind, the uppermost petal being longer and rounder than the rest, and slightly furrowed on the side; the lower ones are short and end in a point; in the middle of the flower is formed the style, which afterward becomes a pod containing the seeds.—*Rural New Yorker.*

Watermelon Vinegar.—Perhaps it is not generally known that a fine white vinegar can be made from the juice of Watermelons. We had a large quantity of melons last season, and, after we had cut out their crimson cores for eating, scraped the shells, from which we gained a large amount of juice. This we carefully strained, and put into jugs with small glass bottles in their mouths. We set the jugs out into the sun, and in time had a fine-flavored, clear, strong, white vinegar. The vinegar at a certain stage will be very bitter; but, when perfected, loses this, and acquires true vinegar taste.—*American Agriculturist.*

PEACH FUNGUS.

BY DR. J. STRENTZEL.

Two years ago, in the orchards along the Sacramento River, was first observed the extended growth of a new fungus or lichen on Peach-trees, covering the fruit in ash-colored blotches, and the ends of growing shoots in detached masses, spreading from a cottony tuft of a growing germ. The leaves on the affected part drop off later in the season, and the end of the shoot generally dries up. The growth of the fruit is not apparently checked, but the thin-skinned varieties, on ripening, get a puckered-up, pocky, disgusting appearance. The earlier varieties are most affected; the yellow, among them the Crawford, not so much. None was noticed on the Snow Peach. The present year the disease has appeared in an extended circle, and is causing a greater injury to the fruit.

It is not pretended to assign a cause for this anomalous growth, beyond that the peculiar atmospheric condition was favorable to its rapid development. The trees may have been also depleted of vitality, or this having been an unpropitious year for the "curled Peach-leaf" the superabundant sap found a new parasitic consumer. But it can be reasonably hoped, that some of the usual means employed for the destruction of kindred growths, will be serviceable in this case. That the disease will certainly spread to all parts of California can be fully apprehended. The losses thus incurred would be severe to horticulturists. Thus it is of importance that every experience should be brought to public knowledge, and every means of extermination at once tried. The burning of the pruned off-shoots should be rigidly followed; the ground around the trees scraped and limed, and the whole orchard repeatedly fumigated, early in spring, in favorable weather, by keeping up numerous smoldering fires of spent tanbark, or damp straw mixed with asphaltum or coal-tar. These are the most available means for the destruction not only of varieties of mildew, but also of innumerable noxious insects.

NEW FRUIT-DRYING PROCESS.

Fruit-drying has been carried on to some extent, both in Santa Clara and other counties, during the last year, and promises at no distant day to become a most important industry. In some places the fruit is dried by means of artificial heat; in others, by the heat of the sun. In the neighborhood of Santa Clara may be seen an apparatus fitted up for drying fruit by artificial heat. On the premises is a steam-engine of fifteen horse-power, used for sawing lumber for boxes, for grinding apples for vinegar, and for other purposes connected with fruit-packing. Close to the engine is a wooden cylinder about five feet long and three and a half feet in diameter. In the cylinder, placed in close proximity to one another, are six hundred brass tubes, into which the air is forced by a fan worked by the steam-engine. The waste steam from the engine is conveyed by a pipe into the top of the cylinder, and, after becoming condensed, runs out at the bottom, heating, in the mean time, the air in the brass tubes. The heated air rushes out at the other end of the cylinder, and enters the bottom of what looks like a large chest of drawers, thirty-two feet long, ten feet high, and seven feet wide. This is the kiln. The kiln is divided into eight compartments, into which are fitted galvanized iron screens for holding the fruit. There

are in each compartment forty-two screens, on each of which twenty pounds of fruit can be dried. In the face of the kiln there are several horizontal doors placed one over the other, so that in handling the screens only a small portion of the kiln is exposed to the cold air. The kiln is capable of drying over three tons of fruit at once. Some of the fruit, preparatory to drying, is cut by hand, but more by machinery. Apples dry in seven hours; pears, tomatoes, and plums, in eight or nine hours. Grapes require about twenty-four hours. The process could be completed more rapidly, but the result would not be so satisfactory as when sufficient time is allowed. It takes about seven pounds of apples, seven pounds of pears, twenty pounds of tomatoes, six pounds of plums, and five pounds of blackberries to make one pound of each kind of dried fruit. During last year were prepared and sold at this establishment 12,000 pounds of dried pears, 8,000 pounds of dried apples, 3,000 pounds of dried plums, and a large quantity of grapes, blackberries, and other fruits. Sent East by rail were forty-four car-loads, each containing 17,500 pounds of fruit. Some of this was purchased from other fruit-growers.

According to a fruit-grower who dries his fruit in the sun, from four to seven pounds of plums will make one pound dry. The process of drying lasts from four to ten days, and the estimated cost amounts to three cents for each pound of dried fruit. It is sold in San Francisco for twenty-five cents a pound. The grapes dried by this process in different parts of the State were exhibited last year at the agricultural fairs, and were, in general estimation, superior to the imported raisins. The quantity of lumber required on which to dry the fruit is considered the greatest impediment to the success of this process. In some places the grapes are dried on the vine. This process is carried on in the interior valleys, where they have little dew or fog, and where the thermometer ranges from 80 to 115 degrees. Though no one of the persons engaged in fruit-drying has had much experience to guide him, yet the results are highly encouraging.—*From Overland Monthly for September.*

Irrigation.—*The San Joaquin Valley Argus*, in speaking of the advantages of irrigation, says: We rode over a portion of the country on the west side of the San Joaquin River recently, and had an opportunity of seeing the advantages of irrigation, by comparing the sterile waste on one side with the lands on the opposite side of the great canal, which were under the fertilizing influence of the abundance of moisture afforded. The lands irrigated have given to the thrifty farmers an abundant harvest of wheat, or are covered with growing and maturing crops of corn, alfalfa, vegetables, and fruits in great variety and abundance, making the people's homes attractive and the people themselves contented and happy. The Canal Company having made terms with the farmers in the valley below the present terminus of the canal at Los Baños, are preparing to extend their great work down through the valley to the Point of Timbers, and will soon have a heavy force engaged in enlarging the channel at the upper end and reducing the fall so as to make the canal available for navigation as well as irrigation.

Rye flour boiled in water, with a little alum added while boiling, makes an adhesive paste almost as strong as glue.

VALUE OF PLANTING ORNAMENTAL TREES AND SHRUBS IN HOME GROUNDS.

The question of actual profit in dollars and cents, in planting ornamental trees and shrubbery, is not to be so exactly shown as it has been with fruit trees, yet there is a vast profit herein, not limited to the immediate advantage of the planter or purchaser of the property so embellished. Who can have failed to note that when a piece of real estate is offered for sale, its ornamental trees and plants (if well selected and in good culture) always add a charm, which finds recognized value in the increased price paid by the buyer? Is there no profit in planting and caring for good trees and plants for ornament? Every farm and orchard, every street and highway, every public square, park, or cemetery, needs its ornamental planting, and all property adjacent is increased in value where it is done. On the farm, near the orchard and near the house, and on the highway, ornamental (not less than useful) screens of deciduous or evergreen trees, are more or less necessary (if Nature has not provided in advance) as protections from wind and storm. Any farm, orchard, or vineyard so protected will yield a larger annual return, and will come earlier into ripening, and consequently the value of the property be increased. A dwelling embowered in trees, is manifestly more comfortable in all seasons of the year, and must be more healthful in consequence of the equalized temperature produced thereby, and of course enhanced in value by this important aid.

It has become a common subject of remark and study — the influence of trees on climate and crops, as evinced by the destruction of our native forests by the woodman's axe. On the western prairies we now see forests and groves springing up, and carefully cultivated to protect farms and houses from the effect of storms and blighting hot winds, and to furnish timber and fuel. Who can tell of the great increase of value to accrue from these young groves, and from the vast lines of beautiful hedges now growing up in the West, to take the place of unsightly fences?

Every homestead requires its arbor of vines, its screens of evergreen trees, and its beautiful hedge-rows, for the seclusion they afford, and to keep out of sight objects not proper to admit to the public eye. Every porch, and every approach to the home, claims the grateful shade of some over-arched tree, or the welcoming smiles of plants, of beautiful foliage, and fragrant flowers.

The healthful effects and profits of the various fruits of garden or field have their due importance, yet the sacred associations of home are by no means complete till the inviting shades of beautiful trees and the sweet scents of many-tinted bushes and plants bespeak a regard for something beyond the pleasures of the palate or the profits of culture, and declare the bliss of contentment more precious than gold.

The importance of our subject is not limited to the planter, or the owner of the premises; it extends to the whole community. The constant, careful culture of good plants, whether for fruit or ornament, can not fail to exercise a healthy influence on all in their vicinity, as regards both taste and morals. It leads to gentle thoughts and good purposes. The soothing and refining influence of spreading trees, of flowering shrubs with delicate odors, of graceful climbers with drooping festoons and intertwining tendrils, betoken home affection, home comfort, contentment; and must bear profit in inspiring deli-

cate thoughts, in ameliorating manners, in cultivating virtue.—*Horticulturist.*

CAMPHOR.

Perhaps the most common and popular medicinal agent for household use is camphor, a drug which has been regarded as a cure-all by mothers, grandmothers, and great-grand-mothers, down through many generations. The "camphor bottle," holding a solution of the agent in rum or dilute alcohol, is found upon a shelf in almost every dwelling, and if among the younger or older members of the family an ankle is turned, or a limb bruised, or there is headache, or teethache, or earache, or belly-ache, down comes the camphor bottle, and the suffering member is well dosed. Camphor is a powerful agent, and, in moderate doses, capable of doing much mischief. It is a matter of wonder that so few instances of injury result, considering its wide-spread empirical employment.

Camphor is brought to this country in a crude or impure state, and here it is subjected to the process of distillation to render it fit for employment. There are several important refineries in this country, one of which is at Rumney, N. H. A correspondent of *The People* presents the following interesting facts regarding camphor and this refinery:

"The camphor of commerce comes from Formosa, Sumatra, Borneo, Japan, and China. It is obtained in crystalline masses already formed, and also in grains by distillation. The tree which produces the former kind is a near relative of our Basswood, which we know as a charming tree, perfuming the air and yielding the finest honey in the world. It grows on the Diri Mountains in Sumatra, and in Borneo. It towers upward more than a hundred feet, and has been known to obtain a girth of fifty feet. The spirited persuasion of the axe draws from this forest monster the white treasures secreted in longitudinal fissures in its heart wood, sometimes, though rarely, in a layer as large as a man's arm, but more frequently in small fragments to be carefully extracted by some sharp-pointed instrument. It is not an abundant bearer. Twenty pounds is a rare yield for a great tree; ten pounds is a good harvest from one of medium size, and many are felled and split that furnish no camphor. This, however, is not an entire waste, since the wood is easily worked, and is never attacked by the voracious myriads of eastern insects which destroy all other varieties except the Teak and Calambuco. House and ship timber are made from it, besides many articles of furniture, and the aromatic trunk is extremely valuable to the housekeepers of our colder climate. This kind of camphor seldom finds its way to Europe and America. The Chinese ascribe to it marvelous medicinal properties, and pay for it enormous sums, thereby securing the entire yield.

Common camphor is obtained by distillation from the root, stem, and leaves of certain species of *lauracœ*, but more especially from the *Laurus camphora*. This tree is of good height but not gigantic, is many-branched with evergreen lanceolate leaves on short stalks, and small yellowish blossoms in long clusters at the end of the flower stems. Of this, also, there are two varieties. The Chinese or Formosa camphor is carried in junks to Canton, and there packed in square chests lined with lead, whence it is sent to the different eastern ports, where we procure it. It is of a grayish color, with a grain like sugar,

and usually unattractive in appearance. The Dutch or Japan camphor is prepared in Batavia; is packed in tubs securely matted, is pinkish in hue, and coarser than the Chinese.

Both kinds need purification before using. The Venetians first, and afterward the Dutch, monopolized the labor and profit of refining it, for a long period, and it is only of late years that other nations have succeeded in obtaining it in its crude state.

Camphor is slightly soluble in water, but yields freely to alcohol, acetic acid, ether, and the essential oils. A pretty experiment may be tried with it which the young people will find amusing. Scatter a few pieces of clean camphor upon pure water, and they will whirl and sail about, keeping up the dance sometimes for hours. Drop among them some greasy matter, and the merry little performers will stop on the instant.

Milton Holden & Sons, of Rumney, N. H., have the only camphor refinery belonging to New England parties. There is one at Stamford, Ct., but it is owned in New York. There are two in New York city, and one in Philadelphia.

The loss in refining runs from eight to sixteen per cent. The firm now are employed by W. F. Weld & Co., of Boston, and refine from six to seven hundred pounds per diem. They have two large furnaces, the tops of which are covered with heavy iron plate, and about an inch of sand to regulate the heat. They have fifty-six square and thirty-eight round pans, which are filled every morning, and in twenty-four hours are ready to be emptied. These have tin globe-shaped covers, with a tubular vent in the centre, and as the heat dissolves the camphor into a liquid, it rises in the form of vapor, and attaches to the covers, the impurities falling to the bottom of the pans. It requires long experience to know just the amount of heat required so as to secure the purest article with the least loss.

It requires about one-quarter of a cord of wood per day to run these furnaces, a day's work averaging fifteen and a half hours. After cooling, the contents of the square pans, clear as crystal, are packed in boxes of one hundred pounds each, and those of the round ones into barrels carefully lined, and are then sent to market, and from thence into every dwelling in the land.

AMONG THE ROSES.

An ardent Rose lover, whose enthusiasm bubbles over in glowing words, writes to the *Canada Farmer*, of some of his favorites:

"A perfect little gem is Madame Alfred de Rougemont; my first experience in blooming this Rose was with it in a pot, and it was a most charming sight. I planted it, however, in the open ground, where it passed the last trying winter safely, without any protection; and has been and still is covered with its delicate and lovely roses. The wood and foliage are of a light green, the growth moderately stout, and with a free and graceful habit. The roses are small in size, quite double and full; when newly opened they are most handsomely capped with white, with a delicate tint of flesh color, deeper towards the centre. It is a most abundant bloomer; and though by no means showy, is yet exceedingly attractive in its modest loveliness. For bouquets in which light colors predominate, for wreathing the hair, or set singly for a loop to gather flowing tresses, it is perfect.

"Among the brilliant dazzling ones, I place in the foremost rank the Duc

de Rohan. Free and vigorous in habit, its leaves thick and massive, yet glossy in their dark green, the entire tree puts on the air of one of noble blood; the roses are large, double and full, and when newly opened, are of a dark rich red brilliantly shaded with vermilion. The petals are of good substance, and have that rich velvet-like appearance which gives such fullness and depth to the glowing color. Apparently perfectly hardy, and an abundant bloomer, it will take a commanding position in all our choicest collections.

"Another of these dashy showy fellows is Lord Macaulay. One would hardly expect the staid old historian's name to have been handed down to coming time linked with such scarlet and crimson robes. But it is a lordly Rose, nevertheless, and seems likely to thrive well in this unaristocratic land of ours; never losing a bud through all the trying weather of the past winter, it pushed forth its stout, dark green shoots when tardy summer came at last, and clothed them with thick, leathery, shining leaves, which tell of blood. And then came the roses, large, full and showy; noble blooms, opening with a brilliant scarlet color which changes at length to a deep glowing crimson of rare richness and beauty.

"But for queenly stateliness of habit and queenlike beauty, Madame La Baronne de Rothschild is peerless among the Roses. Others may blush with a more coy and maidenly grace, others may put on more gorgeous apparel and dazzle the eye with purple and scarlet, but she robes herself in glossiest satin, and draws around her the drapery of ample folds, dyed with richest yet most delicate peach-blow tints. The stout shoots, armed with ivory-like spines, have an air of matronly dignity, and the large, very large, handsomely cupped, stout-petaled roses, borne singly on the extremity of each shoot, and such a clear light satin rose, crown it with royal beauty. I do not wonder if Rose growers in England were wild with excitement over the advent of this Queen among Queens, and the Royal Horticultural Society awarded to her the highest certificate of merit. One thing I have noticed that is worth remembering: it bears the fierce heat of our July sun uncommonly well.

"And what a charming Rose, in its stainless purity, is the Boule de Neige. The blooms are small, and in the esteem of some that may be counted a defect; but to me its comparatively miniature size is one of its highest charms. Set off with a single spray of its bright green leaves, how charmingly does its snowy whiteness contrast with those raven locks. And whatever may be wanting in size, it more than compensates in the abundance of roses, while the petals are rolled back so neatly, one upon the other, that it well deserves the name of Ball of Snow. And last fall, I remember, what an abundance of white roses we gathered from this best of white autumnals.

"And writing of autumnal bloomers, reminds me of that prince of dark Roses, Xavier Oliro. Last fall this was one of the most attractive in the bed; and now the tree is covered with roses and rose-buds, as though its life work was to cover itself with blooms. And such blooms they are, too, magnificent in size and beautifully full, of a deep yet brilliant velvety scarlet, when first open, and gradually changing to darkest crimson. It is an exceedingly showy Rose, that can not fail to be admired in the choicest selection—beautiful when only its rich, deep-green, glossy leaves are to be seen, but gorgeous when, mingling with its shining foliage, the

darkly glowing roses are seen in the height of their beauty.

"But I must stop. Yet I can not stop until I have shown you the lovely Countess de Chabrillant. Did you ever see such shell-like petals, so beautifully set in cup-like form, and so sweetly tinted with shaded pink? Is it not a most lovely flower? And each rose is so perfect; not crowded in clusters so close that none can get room to unfold in perfection, but singly, borne on the point of each strong shoot."

CALIFORNIA SEEDLING PEARS.

At a meeting of the Western New York Horticultural Society last winter, President Barry acknowledged the receipt of several varieties of Seedling Pears, originated in California, of which he said:

"In the month of November last, I received twenty-six varieties of Seedling Pears, raised by Mr. Bernard S. Fox, of San José, California. Their appearance surprised me. Many of them were so much like some of our old, well-known sorts, that I half suspected my friend Fox of playing a joke on me. There were Bloodgood, Seckel, Lawrence, Winter Nelis, Beurre Clairgeau, Beurre Bosc, Easter Beurre, Duchesse d'Angouleme, Beurre Superfine, Glout Morceau, and others.

"Some friends, very good judges, to whom I sent specimens, had the same doubt in regard to their being seedlings. When I began to examine them closely, and cut them, I found they were quite distinct from the sorts they resembled, and were positively new. I then wrote to Mr. Fox for some account of their origin, and he answered that they all sprung from the seed of the Belle Lucrative, sown in 1863, and had fruited in the rows where they had first grown.

"Some bore the fifth year, and the sixth over 200 bore fruit. One-fourth of the trees have not yet fruited, and for five years to come new fruits may be expected. Many of these varieties are fully equal in size and beauty to our best, and many have the advantage of being quite late. Generally speaking, they are deficient in vinous flavor, like the Easter Beurre and others of that class. Only one or two are slightly vinous; but some were justly entitled to rank as best. A few of the largest appeared to be inferior in quality; one specimen of these, resembling Nouveau Poiteau, in 1871, weighed two and one-half pounds.

"This is, beyond doubt, the most remarkable instance of success in raising Seedling Pears on record. And the fact that all are from seed of Belle Lucrative, and none like that variety, but like all others growing around, is both curious and interesting, showing that the mother plant did not affect the character of the varieties. This might have been the case had some other varieties supplied the seed. Much of this success is, no doubt, due to the peculiar climate of California. The early age at which these trees begin to bear, even in the seed-bed, seems strange to us. Mr. Fox wrote me he could have sent eighty varieties the past season.

"We may now cease looking to the old world for new varieties of Pears, and turn our attention to the Pacific Coast. Mr. Fox has already raised Pears superior to nine-tenths of the new varieties received from Europe in twenty years. And we shall not only get new varieties from the Pacific Coast, but we must expect to see our markets filled with their Pears. The supply from that source is already large."

LANDSCAPE GARDENING.

Gardening, in all its branches, is a science that but very few understand; and *landscape gardening*, by which we mean ornamental gardening, or laying out grounds in design, is an art in itself. No one who has not a natural eye for the beautiful, and an innate love of Nature, can ever make a complete landscape gardener.

The artist on whom "Flora" and "Pomona" shower their favors and blessings feels their inspiration in all the labor he performs, and the *trees*, *plants*, and *flowers* thrive and grow, bud and blossom, and yield their fruit, as it were, by magic. There is a mysterious and electric chain that binds the master spirit and the dormant plants, which, when inspired, gives life and growth as the reward of faithful labor.

How few who assume to know, and claim to be "experts" in gardening science, ever produce successful results. They are almost wholly ignorant of the true science, and only spoil by their efforts what could have been made beautiful; they seldom possess the requisite experience, taste, or knowledge, to bring about a happy result.

A landscape gardener can only acquire a requisite knowledge of this art by much reading and study, and considerable practice—with an observant eye to the workings of Nature; for her skillful hands make "hill and dale," and "light and shade," just where from a given spot a "beautiful picture" should always be found.

The skillful landscape gardener must possess the requisite knowledge to *look forward* to the "years to come," and know the character and habits of the trees and plants he places in his grounds. He should know the size each will attain, the extent of their branches, etc , so that all their future growth shall still keep the design beautiful or make it more perfect. It is an utter ignorance, or inattention, to *this point*, that ruins so many grounds, that could have been an ornament to a large neighborhood — while the failure of such labor only deters others from like attempts.

No person who has a handsome residence should ever improve his grounds hastily, or leave this all-important work to common or unskillful hands. A bad design around a handsome mansion, in the garden grounds, or improper trees and plants, or good ones badly arranged, will destroy the beauty of all, and deteriorate the value of such a residence many times the cost of good and perfect work.

California offers to all who will accept from a bounteous Nature a "rich gift"—a climate and soil which, if rightly improved, will always secure to every homestead beautiful surroundings. But those who would enjoy such blessings must remember, also, that Nature has laws that are *imperative*. Obey those laws in the cultivation of the earth, and the "horn of plenty" will fill the lap with abundance. Disobey, and barrenness and emptiness is the result.

We think the experience of ten thousand tillers of the earth in California now testifies that *Nature* is not to be trifled with—that Nature recognizes all who obey her teachings, and loads with blessings the thankful heart.

"Nature never did betray
The heart that loved her."

—*California Farmer.*

Editing a newspaper is very much like raking a fire—every one thinks he can perform the operation better than the man who holds the poker.

FERN-PRESSING.

The girls should not forget that this is the time to gather and press green ferns. They are so pretty and refreshing to have in the house in cold weather, so easily obtained, and so little trouble to prepare, that it is a pity any one should be without a few bunches when the flower season has passed. There are many modes of preserving them; but the one that seems the most successful is to pick the ferns when they are young and tender; lay them between newspapers, or in large, flat books, and place them under very heavy weights, until the sap has entirely dried. Persons who gather them in August often leave them in press till Thanksgiving or Christmas; asserting this long subjection to the weights keeps the color better than any other method. The safest way to secure perfect Ferns is to take a book to the woods, and lay each one between the leaves as soon as broken from the stem. Even in a few minutes Ferns will curl at their tips, and after an hour or two it is almost impossible to lay them flat. This process is very good for bright leaves, and makes them look less artificial than when they are varnished. Bunches of autumn leaves are very beautiful evening decorations, if a lighted candle be set behind them. This brings out their brilliant tints, and gives them the appearance of having been freshly gathered.—*Scribner's Monthly.*

A FARMER makes no greater mistake than in supposing that he must be wealthy to have a nice lawn in front of the house planted with flowers and evergreens, or that he can not have Pear-trees, grasses, and an abundance of small fruits.

GARDEN ADORNMENTS.

Ornamental vases, rustic stands, and hanging baskets filled with choice growing plants, now form a prominent and comely feature in the decorations of our flower gardens and pleasure grounds. They are elaborately bedecked, and add richness and elegance to well-embellished grounds. In the smallest gardens there is room for one or more of them; they are of various sizes, and sold largely by seedsmen.

The successful culture of lovely plants in baskets, vases, etc., lies in the proper selection of plants; for example, all the plants set in one vessel should be such as will flourish under the same treatment.

It is true that some species require more water than others—some thrive best in sunshine, others succeed best in partial shade. Any one at a loss to select suitable plants may ask an honest florist to furnish such plants, and the right number, to plant in a vase, stand, or hanging basket. State the size of it, and whether it will be placed in full or in partial shade—and whether creeping or upright plants are desired.

The next point is, to use a rich, light, and friable compost for the plants to grow in, as their roots will be confined in a small space. Frequent waterings should also be attended to. When the weather gets too cold for the plants in fall, all the vessels may be taken into the house, and by special care the plants therein will flourish till the following spring, when they should be thrown out, and the vessels refilled with new plants and fresh compost.

Ferns, Ivies, Lysimachias, Periwinkles, Lycopodiums, Tradescantias, Saxifragas, and many other genera, grow well even where they never get a glimpse of sunshine.—*The Evergreen.*

Editorial Portfolio.

IRRIGATION IN THE GREAT SAN JOAQUIN VALLEY.

This valley extends from Stockton to Fort Tejon, in the southern portion of Kern County, being 250 miles in length, with an average width of fifty miles, and an area of 7,900,000 acres of valley land, less about 600,000 acres covered by Tulare Lake. Its light, sandy soil produces from ten to fifteen bushels of Wheat per acre, and the deep rich loam produces forty to sixty bushels of Wheat per acre. Little has been known of this vast expanse of rich territory until within the past four or five years. The farmers planted Wheat in small tracts six or seven years ago, and increased the area each year, until they were enabled to harvest last year a crop of 12,000,000 bushels of grain, which would require over 300 large ships to carry away.

California is blessed with a climate and soil, which to the agriculturist is a mine of wealth unequaled on the face of the earth, but like everything else in this world, it is not perfect. The one defect is the uncertainty of the rain-fall. Nature has provided in the great Sierra Nevada range, reservoirs of snow, which, melting in the spring and summer months, pour down their streams of gold to the needy husbandmen. This vast plain has a perfectly even surface, and slopes gradually to the west and north, presenting a field for irrigation works, which, in point of economy in distributing the water, abundant and never-failing supply of water, and also richness of soil, can not be equaled. The subject of irrigation has recently attracted a great deal of attention. In our State large sums of money have been expended in the construction of canals. The principal field of operations is in Fresno County, owing to the great abundance of water there and the ease and economy with which the canals can be constructed. The first company organized, two years since, in Fresno, to take water from King's River, near the town of Centerville; length of canal, twenty-three miles; width, fifteen feet; depth, three feet; capacity to irrigate, 50,000 acres. The second, from the same river, near same point, thirteen miles long, twelve feet wide, two feet deep; capacity, 30,000 acres. The third, twenty miles long, fifteen feet wide, three feet deep; capacity to irrigate, 50,000 acres. The fourth, commenced last year, will be completed during the coming winter. A headgate has been erected and three hundred feet of canal cut at a cost of $15,000. It is to be one hundred feet wide, six feet deep, and six feet fall per mile, with a capacity to irrigate 500,000 acres. The above are shown on the map accompanying this issue of the Horticulturist. Water has been used on about 10,000 acres only this season. The canals were built and owned by the farmers of this locality; therefore we can not say what they cost, but would say for work already done about $40,000. Owning the canals, the farmers pay no rate per acre, except enough to keep them in repair. Irrigation can be done cheaply. Mr. Easterby, near the town of Fresno, had 2,500 acres in grain, and irrigated five hundred acres with the work of two men, in one week. Upland, irrigated, yielded fifty bushels of Wheat per acre; and the land not irrigated averaged fifteen bushels per acre.

Although Wheat has been a profitable crop, now that irrigation is at hand the farmers are turning their attention to crops of Cotton, Jute, Flax, Alfalfa, Tobacco, Oranges, Lemons, Limes, Figs, Grapes for wine and raisins, Almonds, Walnuts, etc., all of which can

be grown in Fresno County with the greatest success. There is now under cultivation about 2,000 acres of Cotton, the quality equal to the best upland Cotton of the South. Cost of cultivation one-third less than in the South, and the profit per acre, $25 to $50. The picking is done by Chinamen; wages, $25 per month, they feeding themselves. Jute can be grown here quite as successfully as Cotton, and with more profit. We shall shortly produce our own grain sacks, and thereby keep millions of dollars in the State. Water-power on King's and San Joaquin rivers, for Cotton and Jute factories, is sufficient to drive all the spindles in the New England States, besides the economy in Chinese labor, cheapness of living, saving of fuel, owing to the mild climate, and nearness of raw material to factory. The San Joaquin Valley will become as renowned for Cotton as the Southern States.

Besides the canals shown on the map and referred to above, there is in the same county a canal taken from the San Joaquin River, built by Wm. S. Chapman and Miller & Lux at a cost of $70,000. It is twenty-six miles long, twenty-five feet wide, and four feet deep, with a capacity of irrigating 150,000 acres. It is for the use of themselves alone. Also, a canal built by Mr. I. Friedlander to irrigate the land of the Alabama Settlement, which cost $75,000. The water is taken from the Fresno River; length, thirty-five miles; width, twenty-five feet; depth, three feet; with a capacity to irrigate 75,000 acres. The water will be turned in shortly. Also, on the west side of the valley is the canal of the San Joaquin and King's River Canal and Irrigation Company, starting from the junction of Fresno Slough and the San Joaquin River; length, thirty-nine miles; width, fifty-four feet; depth, six feet; fall per mile, six feet; capacity 500,000 acres; cost, $450,000; charge for water, $1.50 per acre per crop. Fifteen thousand acres were irrigated this year, planted in grain, Cotton and Alfalfa. Owing to the fact that not half the quantity of rain falls on the west side of the valley that falls on the east, crops were a failure on the west side except where irrigated; the result of irrigation showing a yield of from thirty to fifty bushels of Wheat per acre—without it, *none*. The canal is to be extended, during the next two years, forty-five miles farther, to connect with the San Joaquin River, and will be used for transportation. In time, Tulare Lake will be connected with this canal, giving an inexhaustible supply of water. An extension of fifty-four miles will cost $300,000 additional.

Other canals are projected and surveyed from Merced, Stanislaus, Tuolumne, and Calaveras rivers. These will probably be constructed during the next five years. Irrigation on a small scale is also successfully carried on in San Joaquin, Tulare, and Kern counties. People who are now living will yet see the day when the San Joaquin Valley will have a million of inhabitants, large cities will dot its plains, and the value of manufacturing interests be equal to the value of the entire gold yield of the State since gold was discovered.

To Tell Good Eggs.—If you desire to be certain that your eggs are good and fresh, put them in water; if the butts turn up they are not fresh. This is an infallible rule to distinguish a good egg from a bad one.

Three thousand species of grass are known to botanists.

Magnolia grandiflora.—It has been stated that the climate of San Francisco is not warm enough to perfect the flowers of the *Magnolia grandiflora.* This impression is wrong, and all that is necessary to prove this, is a visit to the garden of James Otis, Esq., on Sutter Street in this city, where a finely developed plant has produced some very fine flowers during the last few weeks, notwithstanding that the plant is exposed to the heavy winds and is in no way sheltered. This ought to be encouraging to the more extensive cultivation of this handsome tree, with its beautiful and effective evergreen foliage, which, alone, offers strong inducements for its culture as a choice ornamental shrub or tree.

Apocynum as a Fibre Plant.—From the *Gardener's Chronicle* (London) we obtain the following item:

The *Times'* correspondent at Berlin writes thus of a new fibre plant: A fibrous plant called *Apocynum venetum* has been discovered growing wild in such quantities, in Turkistan, that it may be expected soon to make its appearance in the market. Its fibres, as tender and delicate as flax, as strong and tenacious as hemp, are, by combining the qualities of two, greatly superior to either. The Russians will probably endeavor to transplant it to Europe, an attempt which might be made by other countries as well.

It is tolerably well known that our species of *Apocynum*, of which we have two, furnish a superior fibre, as does also the related *Asclepias incarnata.* All these are vigorous, hardy perennials, and could, under cultivation, be made to yield large crops. A series of thorough and well-conducted experiments, which shall test the comparative value and productiveness of our native fibre plants, is much needed. But how shall it be obtained?

The Overland Monthly for September presents a varied and interesting table of contents. The most interesting practical papers are: "Our Indian Policy," "One of Our Farming Counties," "Rates of Railroad Transportation," and "The Savings Banks of California." There is much other matter, consisting of stories, poetry, and reviews of books. It is one of the best magazines in the country. $4 per annum. J. H. Carmany & Co., publishers, 409 Washington St., San Francisco.

FAIRS AND EXHIBITIONS.

California State Fair.—This Fair, which will open on the 15th inst., promises to be largely attended, and the exhibition, in all its varied departments, will exceed any former display. Forty thousand dollars will be distributed in cash premiums. It will remain open five days.

Horticultural Society Fair.—We would urge our nurserymen and fruit-growers to come out in united strength and excel any of their previous creditable exhibitions. By persistent effort, a full and hearty recognition will be obtained. We must remember that everything here is still in its infancy, and when we have cultivated the tastes of the people to a more appreciative standard, the reward will be more abundant and satisfactory. The premium list, and all other necessary information for exhibitors, will be found on page 4 of the cover of the present number.

One Hundred Merino sheep, with plenty of bedding, will, during the ordinary feeding time in winter, produce about forty two-horse wagon loads of manure, which is far more valuable as a fertilizer than that of either horses or cows.

With pleasure we refer our readers to the advertisement of the *Wholesale Catalogue* for autumn, 1873, of Messrs. Ellwanger & Barry, of Rochester, New York. It is sent free to all applicants. Also, to their extensive assortment of Trees, Plants and Bulbs mentioned on page 8 of our advertising sheet.

Dried Fruit—The Alden Process.—We were shown, a few days since, some bunches of grapes which had been dried at San Lorenzo by the Alden process. The grapes, although hardly ripe, had been perfectly cured and turned into raisins in four hours. The fruit-growers in that vicinity are well satisfied with their experiment so far. About 30,000 pounds of green fruit can be worked off in a day, with the following results:

Fruit.	Pounds green fruit.	Per ct. waste.	Pounds dry fruit.
Apples.....	100	88	12
Peaches.....	100	88	12
Apricots.....	100	86	14
Pears.....	100	88	12
Plums.....	100	86	14
Grapes.....	100	80	20
Blackberries....	100	84	16
Pitted Cherries.	100	84	16
Gooseberries....	100	80	20

If the fruit-grower can get one cent a pound for the choicest varieties of grapes, the profit will be much more satisfactory than on a wheat crop. One hundred pounds of grapes at a dollar will produce twenty pounds of raisins worth two dollars and a half. Deducting expenses of freight and the cost of drying, there would still be a margin of more than one hundred per cent. Good raisins will sell readily at fifteen cents a pound, and the highest price asked in round lots for the best kind of grapes would not exceed five cents, while the Mission and some other varieties can be bought at a cent a pound. If the Alden process can't make home-made raisins plenty, we know of no other process that will be likely to secure such a result.—*Bulletin.*

Grouping of Plants.—There is no way in which the deadening formalism of our gardens may be more effectually destroyed than by the system of naturally grouping hardy plants. It may afford most pleasing results, and impress on others the amount of variety and loveliness to be obtained from many families now unused. Trees and shrubs, distinguished for their fine foliage, collected in quiet glades; and then bright-foliage trees should be set in contrast with quieter colors, and varied with bright beds of flowers and leaf plants, or hardy flowering shrubs. Those groups should be irregularly but artistically planted. Then on a knoll plant a large bouquet of the rosaceous family—Hawthorns, Cherries, Plums, Pears, Peaches, Almonds, etc. There is so much that may be done to add to the bewildering beauty of a landscape by naturally artistic planting, that we are often astonished that people do not "see it."—*Rural New Yorker.*

Tree Lemon Verbena.—In these days, when *effective* plants are sought after, we should not lose sight of things at hand with which to produce as good results as any new introduction can afford. The London *Gardener's Chronicle* calls attention to the pretty effects which can be had from the common Lemon Verbena when trained as a standard. The wavy spikes of flowers are very graceful, and the odoriferous character of the plant will always make it a favorite in any form.—*Gardener's Monthly.*

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Although, for California, there were frosts in the spring which were unusually severe, and which in some sections cut off at least one-fourth of the Grape and Apricot crops, yet, generally speaking, there was but little damage done, and the fruit production has been but little diminished. The uncommonly cool weather, during the spring and one or two summer months, had the beneficial effect of prolonging the bearing season of many sorts—especially the Strawberries and Raspberries. So, take the season altogether, fruits of all kinds have been most abundant and good. There never was an August that showed on the stalls a greater quantity of every description of fruit. To be sure there were to be seen too many inferior boxes and baskets of Pears, Apples, and Peaches, bringing but little, if any, profit to their producers, and showing how desirable it is for all cultivators to grow only the very best of the several varieties. Diminutive, spongy, and juiceless fruits, of whatever kind, are very unremunerative to all parties, besides being very unwholesome.

With respect to Plums, we should like very much to see the true European Green Gage, so celebrated for its fine flavor, richness, and juiciness, much more generally cultivated by fruitists. In Europe it has many synonyms, (about fifteen), like all the choicest fruits. One of them is, the "King of Plums," to which it is certainly most justly entitled; but its most common name is *Reine Claude*. The true variety is readily known by its short-jointed, slow-growing, spreading, and dwarfish habit. It requires a very rich, warm soil to insure fruit in perfection. The best book authorities pronounce the flesh of the Green Gage exceedingly melting, rich, sprightly, and of high flavor, and it separates freely from the stone. Fruit, medium, round, *suture* slight; skin, yellowish green—green mostly prevailing—marbled and dotted on the sunny side with red; stalk, slender, slightly inserted. The *Imperial Gage*, or *Princess Imperial Gage*, is often mistaken for the Green Gage, but it is considerably inferior to it.

We have tasted samples of the true Green Gage on this coast, and we never ate better in England, or on the continent of Europe. They are to be found in perfection at Mr. Thompson's Suscol Orchards on the California Pacific Railroad. Probably it is not so profitable a Plum to raise as the more common kinds, (the tree being also not so vigorous as some other sorts), but if once well-known in the market, by good judges of fruit and persons of epicurean tastes, we are sure it would fetch a price which would well repay the cultivators.

As to the cultivation of the Plum: the Green Gage, Cloth of Gold, etc., require to be planted about fifteen feet apart, while the Imperial Gage, Washington, etc., would be better at twenty feet. They may be planted in any good soil which is either naturally or artificially drained. They require but little pruning, except to shorten back such shoots as are too vigorous and likely to destroy the regular form of the tree; or to cut out weakly-growing shoots. The Green Gage requires but little, either of branch or root pruning, as it is a slow or slender growing variety. Like all other fruit trees, the Plum does best, of course, when the ground is often ploughed, dug, or hoed around. The best manure is animal. Ashes, in soils devoid of lime and the phosphates, will be found beneficial; two bushels to a

tree twelve feet high will be a guide.

To return to the subject of our markets: Here we will state generally, that fruit, in perfection, should be full-sized, sound, ripe, fresh, and *of the best varieties*. How many there are of our fruits with which the market is loaded, which fall far short of these requirements, we will leave the public to judge; for our own part, we may, perhaps, be allowed to say that, in these respects, a vast quantity of them are greatly deficient.

But notwithstanding these drawbacks, the fruits of California, taking them in the aggregate, are certainly the most perfect in size and condition, as they are also, upon the whole, delicious in taste. All travelers declare that they have never seen anything like them in any other country. Indeed, the truth is, that all of Nature's works that are met with in California are so widely different from those seen in the Eastern or Atlantic States, that when visitors descend into its beautiful valleys from the mountains, they almost feel as if they were treading upon the soil of some new and superior sphere. But, upon recollection, they feel proud that the same flag of stars and stripes floats over the public and private edifices in San Francisco, and on the forts and shipping of its beautiful and extensive bay, as over the rest of the glorious Union.

The supplies of Strawberries and Blackberries are now greatly diminished, and the latter have nearly ceased to make their appearance in market; their value is accordingly appreciating. Apples are very plentiful, and their prices, of course, are moderating. Bartlett Pears are becoming gradually much cheaper, while the common varieties are proportionably lower in price, also. Choice varieties of foreign Grapes—Rose of Peru, Muscat of Alexandria, Tokay, and Black Hamburg—are now in market in large quantities, and are quoted from 8 to 15 cents per pound, only. Apricots and the ordinary varieties of Peaches are nearly gone, with prices but little changed at present. Clingstone Peaches are, many of them, fine and abundant. Plums are now at the height of their excellence and glory, though most of them are of inferior kinds. Seckel Pears—that luscious and high-flavored sort, small though they are comparatively—are beginning, like the Green Gage Plum, to be prized more and more every year, and are to be obtained (unlike the Green Gage) in sufficient numbers for the fruit epicures.

The steamers are bringing slowly moderate lots of Los Angeles Lemons, which, owing to other kinds not being plentiful, bring remunerative prices. Huckleberries still remain at 20 cents per pound; Mangoes, $1; Alligator Pears, $2 per dozen; Smyrna Figs, 35 cents per pound.

On the 1st of September there was no great change in the price of vegetables. Melons also hold their own, but the abundant supply that is coming in threatens to break down the prices prevailing. Watermelons are quotable at 15@35c. each; Nutmeg Melons at $1 per dozen, and Cantaloupes 10@35c. apiece. The best samples of Green Corn have declined 5c. per dozen during this week, and the present range is from 15@25c. per dozen. Rhubarb is 6@8c. per pound; Egg Plant, 8c. per pound; Okra, 10@15c. per pound; Salsify, 10c. per bunch; Summer Squash, 5c. each; Artichokes, 25@35c. per dozen.

Annexed is a correct monthly statement of Strawberry statistics, and the range of prices for each month:

March, 23 chests, 30c@$1 50; April, 3,955 chests, 7@45c.; May, 8,372 chests,

5@15c.; June, 2,918 chests, 5@15c.; July, 3,433 chests, 3@9c.; August, 400 chests, 1½@6c. Total, 19,101 chests.

FILTERS AND FILTERING.—In every well appointed kitchen there are tin or porcelain funnels. For filtering watery fluids, it is only necessary to insert in the choke of the funnel, a V-shaped piece of fine sponge. All such liquids, on being put into the funnel, will pass through the sponge and become quite clear. When this effect ceases, the sponge must be removed and well cleansed. Vinous fluids are best cleared by filtering through a cone of white blotting-paper, shaped by folding a square piece of paper from corner to corner, and then folding the triangle into half its size, and opening the folds; it will fit any funnel, which will act as a much needed support to the paper. Wines, etc., poured into this, will run through perfectly bright. In some cases, where the wine is only thick from lees, cork, or other mechanically suspended substance, it can be made quite clear by filtering through a wad of white cotton put in the choke of the funnel; and when this answers, it is much quicker than the paper filter. For jelly and oil, wool alone is the proper medium for filtering. The felted wool jelly-bag is pretty well known as the best means of clearing calves' foot jelly, and it also answers for olive and other oil. These bags are, however, too expensive to be generally used; hence they are rarely seen in a kitchen. A good substitute for the wool bag is a cullender, on the inside of which a new flannel lining should be fitted, made of double stuff. A wad of white knitting wool, put into the choke of a funnel, will do to filter a small portion of such fluids.—*Scientific American.*

Correspondence.

THE ENGLISH SPARROW.

Editor California Horticulturist: In a recent number of the *Evening Bulletin*, I read with some interest the following:

A Californian who has recently returned from New York is anxious to have steps taken to introduce the English Sparrow on this coast. He says the bird there has proved a great blessing, especially in the city. The trees in the parks are in more flourishing condition in consequence. The sparrow lives on insects; it delights in caterpillars; it searches after the early worm, and when found, makes a meal of him. The result is a great improvement in the foliage within the city. Three years ago Trinity Church graveyard was a desolate-looking place. Scarcely a leaf was to be seen on the trees; the worms held high carnival, and had it all their own way. They built nests in the trees, and dropped down on the necks of the ladies. They were especially partial to green things, but when the foliage gave out, they crawled on the walks, into the church, up the shiny boots of the church-goers, in search of whatever they could devour. The sparrows came and gobbled them up; the leaves got a chance to grow again; the trees took a fresh start, and now all is changed. The trees actually vie with their country cousins in beauty of foliage. The sparrows did it; they are the most wonderful insect destroyers of the feathered tribe. They are also among the tamest birds in the world. They will run along the sidewalk a few feet in front of a person, as if delighted in human companionship. Boys forget to throw stones at them, and hoodlums are abashed in their presence. Such confidence as they display in the kindness of man is not to be returned with cruelty. They even serve to humanize the hoodlum. It is really amusing to see the little creatures come every morning about the door-steps and window-sills to get crumbs of bread from the children. Many become so tame that they perch on the hands that feed them. The keepers of the Central Park say they

have been of great benefit to every park in the city. They breed very fast, and will soon overrun a country when well started. In two years after their introduction in New York city, they were observed at Niagara Falls. They followed up the Hudson and along the Erie Canal, scattering blessings as they went. They would be of much use in the Golden Gate Park. They seem especially adapted to city life, and to abodes in city parks and yards, where little fruit is raised. The fruit-raisers of the interior might object to them, because they would occasionally pick at the cherries, but it is probable that even in gardens in the country they would be of more service than harm. Who can give information about their operations in the country? If any, let them send in their facts—favorable or unfavorable, no matter. San Francisco does not want to be benefited at the expense of the interior, not even in the matter of sparrows.

I fully agree with the writer of the above that the English Sparrow is very beneficial to the vegetation in the East, and particularly to that of the large cities, like New York; but I doubt whether the introduction of the sparrow here would be of much good at this time, and for some time to come. The reasons for my assertions are these: First of all, insects usually taken off by the sparrow have not proved troublesome on this coast; they are very few in number, and although they multiply very rapidly when they once make their appearance, the fact remains indisputable that insects are not now more numerous than they were twenty years ago, for reasons which may require proper explanation, but which are immaterial here.

Secondly, the ornamental trees which are cultivated hereabouts are chiefly evergreens; and nine-tenths of those, again, are coniferous trees, the foliage of which is not attacked by insects. The trees at the Trinity Church-yard of New York, which the writer of the above mentions, are all deciduous, to the best of my recollection, and it is the foliage of such trees upon which the insects in question live. The same is the case with all of the shade trees along the streets and roads of the eastern cities. Our shade trees consist chiefly of the Eucalyptus and Acacia, and none of them are apt to be injured by insects, according to my experience.

I am strongly in favor of protecting birds—they do more good than harm. But the introduction of sparrows will be an expense unaccompanied by any benefit that I can perceive at this time.

Yours, truly, F. A. Miller.

Rochester, N. Y., Aug. 4, 1873.

J. H. Carmany & Co.—*Gentlemen:* We read your Magazine with much pleasure; and it seems to be so interesting to those in our employ, that it is difficult for us to keep the numbers on file, which we wish to do. We desire you to send us the numbers of the first six months of the present year, that we may preserve them. We do not know that you can supply back numbers, but if so, please send them on, and drop us a line stating the amount of indebtedness, and we will remit.

Yours, very respectfully,

J. Vick.

Alhambra, Cal., Aug. 21st, 1873.

Messrs. J. H. Carmany & Co.—*Sirs:* Even a hasty perusal of the two numbers of the Horticulturist received impressed me so favorably, that I am anxious to get the back numbers, from January. I beg of you the favor to alter my subscription, to be for the year 1873. Whenever the spirit moves me, I will take pleasure in sending you some *practical notes*. Yours truly,

J. Strentzel.

Editorial Gleanings.

The Canned Pineapple Trade.—The schooner Rebecca Florence, Captain Richards, has reached this city with the largest cargo of canned Pineapples ever brought into any port, she having 420,000 cans in bulk, and 1,217 cases, containing 23,000 cans. The establishment at Nassau for canning Pineapples was placed in operation two years ago by Messrs. Kensett & Co. and Evans, Reeves & Co., of Baltimore, and Kemp, Day & Co., of New York. A grant was obtained from the English Colonial Government for five years, and large buildings have been erected to carry on the industry, where the Pineapples are received fully ripe and fresh from the plantations. The packing season commenced this year on the 14th of May, and ended on the 31st of July, during which period 1,000,000 Pineapples were purchased, and 1,010,000 cans of the fruit were packed. For six consecutive days 32,000 cans were packed on each day. The pines come from the island of New Providence and the surrounding out-islands, and are bought at from eighteen to forty cents per dozen, in gold. The company had upon their wharves at one time during the season just closed, 90,000 Pines. The native laborers, men and women, employed in the height of the packing season number from 400 to 600, and they are paid from eighteen to fifty cents per day, in coin, labor being very cheap.

Mr. Henry Evans, Jr., of one of the firms engaged in the business, came home in the schooner, having been at Nassau during the packing season, superintending the operations. The Rebecca Florence has brought two cargoes to this port this summer, which is all of the fruit shipped to the United States, the remainder going to the English market. From Baltimore the canned Pines are distributed throughout the United States, and bring about $4 per case of two dozen two-pound cans. On the 31st of July the canning season ended, and operations will not be resumed until May of next year. The firms have about $200,000 invested in the enterprise, and for fruit and labor alone the sum of $60,000 was paid in Nassau, which is of great importance to the inhabitants there, as there are but few industrial resources yet developed on the island. The cans for the English market are of extra size, as the Pines for that trade are packed whole, while for this country they are canned in pieces. The following is transcribed from a beautifully printed label, bearing a good picture of the fruit, and intended for the English cans: "Fresh Pineapples, (whole), packed in her Majesty's Colonies, by the Nassau Packing Company, Nassau, N. P." The preserving is effected by the aid of steam, generated by an engine, and forced through tubes into vats containing the fruit. The sugar used is granulated, and of the finest quality. By the grant all machinery and raw material are imported free of duty, except sugar, and even upon that, a drawback of ninety per cent. is allowed by the Colonial Government as it is used. The cans for the reception of the fruit are all manufactured in Nassau, but the skilled labor is obtained in Baltimore. This is a new enterprise, conceived by the firms named, there being no other parties in the business, and it has met with most gratifying success.—*Baltimore American.*

Double Fertilization of Female Flowers.—Mr. Arnold, of Paris, Canada, has shown that if the female flowers of an Indian-corn plant are submitted to the action of pollen from male

flowers of different kinds of Corn plants, each grain of the ear produced shows the effect of both kinds of pollen. In an experiment related, a given female flower was subjected first to the action of pollen from a yellow variety of Corn, and then to that taken from a white variety; the result was an ear of Corn, each grain of which was yellow below and white above. The conclusion presented is, not only an immediate influence on the seed and the whole fruit-structure by the application of strange pollen, but the more important fact that one ovule can be affected by the pollen of two distinct parents, and, this, too, after some time had elapsed between the first and the second impregnation.—*Scribner's Monthly.*

Vegetable Instinct. — If a pail of water be placed within six inches of either side of the stem of a Pumpkin or Vegetable Marrow, it will in the course of the night approach it, and will be found in the morning with one of the leaves on the water.

This experiment may be continued nightly until the plant begins to fruit. If a prop be placed within six inches of a young Convolvulus, or Scarlet-runner, it will find it, although the prop may be shifted daily. If, after it has twined some distance up the prop, it be unwound, and twined in the opposite direction, it will return to its original position, or die in the attempt; yet, notwithstanding, if two of these plants grow near each other, and have no stake around which they can entwine, one of them will alter the direction of the spiral, and they will twine around each other.

Duhamel placed some Kidney Beans in a cylinder of moist earth; after a short time they commenced to germinate—of course sending the plume toward the light, and the root down into the soil. After a few days, the cylinder was turned one-fourth around, and again and again this was repeated, until an entire revolution of the cylinder was completed. The beans were then taken out of the earth, and it was found that both the plume and the radicle had bent to accommodate themselves to every revolution, and, the one in its efforts to ascend perpendicularly, and the other to descend, they had formed a perfect spiral. But although the natural tendency of the roots is downward, if the soil beneath be dry, and any damp substance be above, the roots will ascend to reach it.—*Exchange.*

Roots as Manure.—It has been found that the roots of a good crop of Red Clover left in an acre of land after the removal of the crop, weigh 6,580 pounds or from three to three and a half tons. The same examination gave the weight of an acre of Rye roots at 3,500 pounds, and of Wheat roots at 3,400 pounds. All this matter is of course valuable for the use of such crops as may be grown during or after its decomposition. The well-known superiority of Clover as a manuring crop, however, is not due alone to the greater amount of organic matter, taken mainly from the atmosphere, which its roots supply, but also to the position in which this matter is deposited. The roots reach deeply into the soil, and on their decomposition they serve to draw moisture from the lower soil, and by the decomposition of fertilizing matter to a considerable depth, they induce the descent of the roots of other crops to a point where they are much more sure of a supply of moisture during a dry season than they could be if nearer the surface. Then again, these deeply penetrating roots traverse parts of the

subsoil not heretofore open to vegetation, and in their decomposition they produce a chemical effect on the inorganic substances that lie along their courses, and help to render them, too, serviceable for future crops.—*American Agriculturist.*

The Eyes in Deep-sea Creatures.—In his "Notes from the Challenger," Wyville Thomson says: The absence of eyes in many deep-sea animals, and their full development in others is very remarkable. I have mentioned the case of one of the stalk-eyed crustaceans, *Ethusa granulata*, in which well developed eyes are present in examples from shallow water. In deeper water, from one hundred and ten to three hundred and seventy fathoms, eye-stalks are present, but the animal is apparently blind, the eyes being replaced by rounded, calcareous terminations to the stalks. In examples from five hundred to seven hundred fathoms, in another locality, the eye-stalks have lost their special character, have become fixed, and their terminations combine into a strong, pointed rostrum. In this case we have a gradual modification, depending apparently upon the gradual diminution and final disappearance of solar light. On the other hand *Munida*, from equal depths, has its eyes unusually developed, and apparently of great delicacy. Is it possible that in certain cases, as the sun's light diminishes, the power of vision becomes more acute; while at length the eye becomes susceptible of the stimulus of the fainter light of phosphorescence?—*Scribner's.*

Hard Lime Floors.—The Mexicans make a floor on which a horse can trot without making an indentation, by the following method: A layer of broken limestone, three or four inches thick, is laid evenly over the surface of the ground, and over this is spread, to the thickness of two inches, a mortar compounded of two parts sand to one of lime; this is allowed to stand twenty-four hours, or until the surface becomes dry. The floor is then thoroughly pounded all over, until it becomes as moist as when first laid, with a block of wood about a foot square and three inches thick, having a handle rising from the middle. The floor then dries, and this operation is repeated until very little moisture can be brought to the surface; a thin layer of red ochre is then sifted on. The floor is then thoroughly polished by a smooth, flat, water-worn stone. Roofs are made in the same manner without the coloring matter, which is added merely to improve the tint, and they are unaffected by sun or rain.

Ficus repens.—The *Journal of Horticulture* calls attention to this plant. We have found it one of the most beautiful things for covering the back walls of greenhouses. It grows in a partial shade almost as well as the common Ivy, and clings to the wall in the same manner. It is a first-rate vase or basket plant. We have found it to endure the freezing point without injury. The *Journal* says: "This is a creeping-stemmed plant, and attaches itself very closely to walls and wood-work. For the former it is particularly suitable, and grows more freely than on the latter, as the wall retains more moisture. The plant has proved itself to be hardier than was thought years ago, it being now introduced freely into warm greenhouses and conservatories, and thrives there very satisfactorily. Very little rooting space is needed, as compared with other plants, for it throws out rootlets at almost every joint. Too much

moisture must be guarded against with these cooler temperatures, otherwise the foliage will be apt to damp-off."

The Best Orchid.—Since so much attention has recently been given to the growth of these curious and beautiful flowers in this country, it is well to know that what in Europe is called "one of the best," belongs to a class very easy to grow. Generally the *Cypripediums* will do in a cool greenhouse almost as well as Geraniums, or any common plant. A report of a meeting in Brussels says: "In the class (confined to nurserymen) for ten *Cypripediums*, there was no competition. The best Orchid in the whole show was contributed by Mr. Linden in the next class as a single specimen, viz: *Cypripedium villosum*—a grand specimen, beautifully bloomed, with upwards of fifty flowers. This plant deservedly received the first prize, the second being awarded to Mr. Van Geert for a nice plant of *Odontoglosum Pescatorhi*, with five spikes of bloom."

Collection of Oranges.—Says the *Journal of the Farm:* "It is not generally known that the Superintendent of the Government Gardens, at Washington, has for some time past been making a collection of all accessible varieties of Oranges, and that he now has over fifty varieties, of which but three kinds have yet been distributed, viz: Tangerine, Maltese, and St. Michaels. It is proposed to have the different varieties tested, and when their qualities are ascertained, to distribute the best kinds for cultivation in the South and on our Pacific Coast. This branch of Horticulture is one which has made rapid progress within the last few years, and we are glad to note that Mr. Saunders is thus assisting it."

Testing Olive Oil.—Professor Palmieri, of Naples, the gallant observer who, it will be remembered, enjoyed himself on the slopes of Vesuvius during a recent long-continued eruption, has lately constructed an electrical apparatus of great delicacy and ingenuity, the object of which is to detect the admixture of other oils with that of the pure olive. The instrument is founded on the fact of the variability in the powers of conduction possessed by the various oils, olive being lowest in the scale. The wires of a battery are brought to a small elongated vessel containing the oil to be examined, and an electrometer being attached, the degree of conductivity can be read off on a scale. The instrument, it is said, can detect any of the usual adulterants with the utmost nicety. It has also been applied to the detection of woolen or cotton fibres in silk fabrics with equal success.

Pine Leaves are at present largely utilized in Europe They are converted into a kind of wool or wadding, which is applied very serviceably and economically as a substitute for hair in upholstery. A kind of flannel material has for some time been produced from this fibre, which is said to be very superior for many hygienic uses, as for rheumatism and various diseases of the skin—vests, drawers, loose shirts, &c., being among the garments made; in the process of manufacture, an ethereal oil is obtained, very useful as a solvent, and as a curative agent. Gas is also made from the refuse, of a quality valuable for lighting manufactories.

Appearance of Milk Under the Microscope.—The number and appearance of the butter globules, when viewed with the microscope, distinguish the various qualities of milk. In sweet

milk they are numerous and crowded together; by the gathering of these butter globules together, cream is formed on the surface of the milk. After butter has been made from the milk a certain amount of the butter globules still remain in it. Boussingault's experiments show that one-fourth part of the entire amount of butter remains in the butter-milk. Skim-milk contains less butter than butter-milk; the latter is therefore often adulterated with the former, but this admixture of skim-milk may be detected with the miscroscope. A good cream contains 37 to 40 per cent. of butter.

Floriculture.—*Scribner's Monthly* says all lovers of flowers must remember that one blossom allowed to mature or "go to seed" injures the plant more than a dozen new buds. Cut your flowers then, all of them, before they begin to fade. Adorn your room with them; put them on your tables; send bouquets to your friends who have no flowers; or exchange favors with those who have. You will surely find that the more you cut off the more you will have. All Roses, after they have ceased to bloom, should be cut back, that the strength of the root may go to forming new roots for the next year. On bushes, not a seed should be allowed to mature.

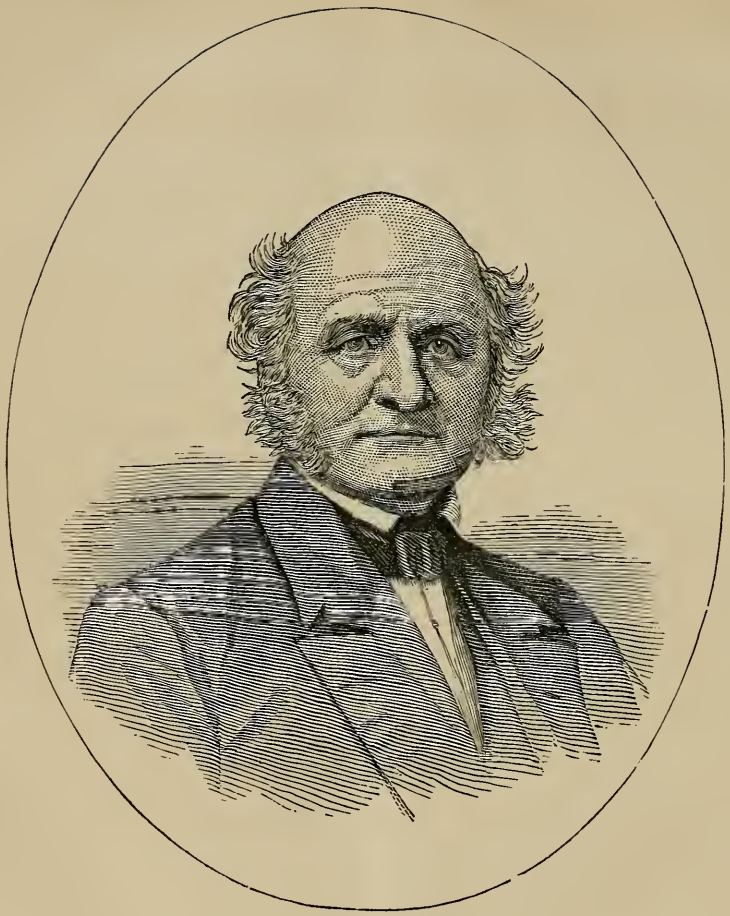
A Good French Idea.—The milk cans in which the milk is conveyed over the railways of France are made of similar shape to ours, but the lids are so arranged that by turning a screw they can be forced down on the milk, and thus prevent all motion. The cans are wrapped in woolen cloths, and these are wet from time to time as they may need it. The evaporation of the moisture thus keeps down the temperature of the milk, and no difficulty is experienced in carrying it a long distance, even in warm weather.

The fishery treaty between the United States and Great Britain permits the admission of fish-oil free of duty, while all other oils pay ten per cent. The question has thereupon arisen whether the oil obtained from seals should pay duty. From a zoological point of view, it is not fish-oil; but since it is the general practice of commercial nations to consider all oils obtained from marine creatures as fish-oils, the government will probably be obliged to regard seals as fish.—*Scribner's Monthly.*

Cissus Discolor.—It is a matter of surprise that this lovely climbing plant is not used for out-door summer gardening to a greater extent than it is. The *Garden* says: "In the gardens of Mr. Linden, at Gand, there is now growing one of these plants which during the past year produced new shoots, the total aggregate of the length of which amounted to 1,625 feet. We are informed that the plant was grown in a mixture of coal ashes and spent tan."

Rose Insects.—If any one is desirous of keeping the Rose-bushes free from the small green vermin, the following remedy will be found a most effectual one: To three gallons of soft water add one peck of soot and one quart of unslaked lime; stir it well, let it stand for twenty-four hours, and when the soot rises to the surface, skim it off. Use a syringe for applying it.—*Science of Health.*

W. Saville Kent shows that in certain spine-finned fish, as the bream, and especially in the male, the color increases in depth and often in brilliancy during the spawning season.



MARSHALL PINCKNEY WILDER,

President of the American Pomological Society.

THE

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HANGING BASKETS.

BY F. A. MILLER.

The "hanging basket" may be considered one of the modern improvements in Floriculture, and has become within a few years the universal favorite with our flower-loving people. Hardly a house can be found, where an attempt has not been made to decorate the window, or the hall door, the veranda, or the conservatory, with a hanging basket of some description.

While some succeed admirably in taking care of these ornaments, and look upon their success with much pride, I hear of many others, who seem to be discouraged by their failure in keeping such ornaments in good growing condition. The fact is, that if a basket is filled with suitable plants, ordinary care will suffice to keep it in good condition; but it is evident that some of our florists do not pay as much attention to *suitable* plants, as to the general appearance, which secures a more ready sale, being pleasing to the eye, but unfit for the purpose. However, the fault rests not always with the florist; neglect and total ignorance as to the proper mode of treatment are very often the cause of failure

Baskets are made of different styles and patterns. Our potteries furnish some very neat ones, both plain and fancy; our manufacturers of wire-work produce some excellent models of various designs and sizes; and within the last few years most elegant rustic baskets, made of suitable wood, have been favorite ornaments. Many other devices and designs have been introduced, such as lava-pots, sea-shells, cocoanut-shells, excavated squashes, soup-bowls, and worthless tin cans, when nothing better could be procured.

Which of all these designs to choose for a hanging basket is merely a matter of fancy or expenditure—they are all suitable for the purpose. As far as I am concerned, I prefer the rustic basket to all others; it is the most durable and the most elegant, but also the most expensive. Next to the rustic basket, comes the wire basket, which is manufactured in all possible styles and patterns, and at very reasonable prices; it is a most graceful ornament, and when lined with green moss most pleasing. In the East and Europe some very excellent designs of baskets have been produced by the potteries, but all the patterns introduced here seem to be deficient and impractical; an improve-

ment in them will be very desirable.

The most important fact in the selection of a hanging basket, is proper size. Too often an attempt is made to cultivate too large a number of plants in a small basket. As it is desirable that a basket should contain a collection of plants, the size of an ordinary basket should be from ten to twelve inches wide, and from six to eight inches deep.

As a suitable soil for baskets, I would recommend a light sandy loam with very little manure. In making the soil too rich, the plants will grow too much, and out of proportion, with the appearance of a wild confusion, when gracefulness and neatness should be the only aim.

At the bottom of the basket a layer of charcoal should be placed, which will keep the soil in a sweet and healthy condition, and I would advise to mix a small portion of charcoal with the soil for the same purpose.

If a rustic basket is selected, proper drainage must be provided, by boring a hole through the bottom of the wooden frame, and placing a few pieces of broken pots over it.

The watering of baskets should be done carefully as often as required. If a basket is allowed to dry up, its beauty is gone forever. The soil should be examined every day, and if the surface appears dry, water must be given. How often water should be applied depends, first, on the size of the basket; and second, on the position the basket occupies. If exposed to the sun, the wind, or the open air, the evaporation of water will be rapid, and during a very warm day it may be necessary to water twice. If the basket hangs in a shady, cool, and protected locality, it requires less water, and perhaps twice a week will be sufficient. During summer, frequent watering and sprinkling of the foliage is desirable. During winter, the basket should be kept comparatively dry; not so much so as to endanger the life of the plants, but enough water must be given to keep up their good appearance.

However, with all the care possible, it is not supposed that a hanging basket will keep in fine condition forever. Sometimes new soil will be required, and also new plants. I think a basket kept in good condition for twelve to eighteen months, has done all that may reasonably be expected. Some plants, of course, will keep much longer than others; for instance, if a basket is filled with nothing but Ivies of different kinds, it may be kept in fine condition for three to five years; if planted with certain kinds of hardy Ferns, its good appearance may be kept up for two or three years; but if a variety of foliage and flowering-plants is used, which is calculated to give a rich and elegant appearance to a basket, it will be necessary to give a thorough overhauling of soil and plants every year.

Wire baskets should be watered by placing the basket in a bucket of water, submerging it to the rim of the basket for about five minutes. This may be done in summer once or twice a week, and in winter once every two weeks. An occasional sprinkling of the foliage, to wash off the dust and to give it a lighter and fresher appearance, is very desirable.

Space will not allow me at this time to speak of the most suitable plants for baskets, but I will endeavor to make it a special subject for the next number of the HORTICULTURIST.

THE span of the great Rotunda of the exhibition building at Vienna is over one hundred and ten yards, or double the size of the dome of St. Peter's, at Rome.

HOW TO GROW THE GLADIOLUS.

An old florist in the *Rural Home*, in commendation of this noble flower, which is so chaste in beauty, so striking in appearance, and so popular among amateur gardeners, gives directions how to plant and grow it. They are quite sensible.

In the first place, Gladioli like an open position; that is to say, they do not thrive so well if surrounded by shrubbery or large trees. At the same time they should not be planted in an exposed situation. It is also essential to bear in mind that they are liable to deteriorate if grown for several years in the same bed without the soil being renewed. Therefore, endeavor to change them from one bed to another every year. Some years ago I grew them for several seasons in the same bed—giving it every year a portion of new soil and removing some of the old. That plan, however, entailed so much labor that I gave it up; and I incline to believe that the more choice varieties become soil-sick; that is to say, they like a change every two or three years at least. At all events, I have fewer losses among the bulbs since I have changed their quarters more frequently, than I had before. It is also quite certain that larger spikes and stouter individual blooms of a decidedly different color, are obtained. The beds are filled up fifteen inches in depth with sound mellow loam, to which a heavy dressing of short rotten manure is added. Early in autumn the soil is laid up rough for the winter. It is desirable to take care that a good layer of dung is put at the bottom of the bed, if you want large and perfect exhibition spikes, and the depth of color and the freshness which so enchant every observer. It is no use to attempt a high state of cultivation in a soil through which the water can not percolate freely.

The main points in their culture are an open position and a free, generous soil, sufficiently drained to prevent stagnant water about their roots. Another important matter is, to see that the surface of the bed is properly mulched with some material that will prevent evaporation, and at the same time prevent the surface soil from becoming baked and hard by the action of the sun. For beds that are in the more dressy part of the garden, there is nothing to equal the cocoanut fibre refuse for mulching. Sometimes I must use half-rotten dung, and at others short grass from the lawn, according as either of these materials may be at hand. When short grass is used, two or three applications are necessary in very hot summers, as it is soon withered up. It is a mistake to mulch them with manure under the supposition that the plants derive much benefit from it, because, owing to the roots being so deep, the fertilizing properties of the dung can not reach them, even if the sun and air did not act upon it, and soon dry it up. For this reason, there should be something substantial in the soil for them to feed upon, without being dependent upon the surface dressings or liquid manure.

With respect to neatly staking the spikes, and carefully attending to them to prevent the wind from doing the flowers harm, it is not needful to dwell at any great length, so I will abruptly close this article by stating that the cultivator must not hurry the bulbs to rest if he desires to keep them safely through the winter. As the seasons differ in their general features, no fixed time can be safely given for lifting the bulbs. The foliage should be quite yellow before they are taken up; and I would rather let them taste the cold than have them out of the ground too long. It is

my candid opinion, that in many cases the disease, so-called, is nothing more or less than a debilitated constitution brought on by the bulbs being so long out of the ground.

AUSTRALIAN METHOD OF COOLING WATER. Large buckets of canvas, says the *Bulletin du Musee*, are made about four feet high and fifteen inches in diameter. A bag of linen or flannel stretched across the top serves as a sieve; and a siphon, a canvass tub, and a wooden cock inserted below the level of the water, are used to draw off the contents. These reservoirs are suspended to branches of trees in shady places, and exposed to the light breezes which in summer always exist in Australia. From the damp surface of the vessels a rapid evaporation takes place, which keeps the water within at a temperature much lower than that of the surrounding air. The editor of the *Scientific American*, commenting on the above, says: This arrangement is on the same principle as the water jars, or "monkeys," used in tropical countries and the east of Europe. The latter are merely unglazed earthenware jugs, having a very small neck and a spout. We have never seen them used in the United States, but should imagine that during the summer months, and particularly in event of ice famines, such as we have been threatened with during the past two years, they might be advantageously employed. The jars may be made by any potter from ordinary clay at a very small expense. By suspending them in a current of air, the water within is kept during the hottest weather at a delicious coolness, and at a temperature much more healthful than that produced by the copious use of ice. The vessels may be molded in fancy shapes, so as to be ornamental for table use.

MARSHALL PINCKNEY WILDER.

BY E. J. HOOPER.

We have the pleasure this month of presenting to our readers an excellent likeness of the distinguished President of the American Pomological Society, whose sessions are held, this year, at Boston, Mass. Mr. Wilder has now filled this high and honorable position in the horticultural world for twenty-four years. He has possessed from very early boyhood an ardent admiration of the beautiful in Nature, and has always been one of the warmest lovers of rural pursuits and of country life. His parents, who were among the earliest settlers of his native State, on account of his lively temperament, and strength and precocity of intellect, were desirous that he should have the advantages of a very liberal education; but he—having but little love for the confinement of a college life, and the close study of the ancient classics or higher mathematics, but greatly preferring the wild sports of the country and the healthy and more useful exercises of the farm—became a youthful farmer upon his father's old homestead. It seems, however, that he was more needed in the mercantile business of his father than on the farm, and he thus ultimately became a merchant in Boston, and eventually an prominent one — a leading man in banking and insurance institutions, and a colonel in a military company. He would doubtless have attained high elevation in political matters, had he so desired; but, after having represented his neighbors in the Legislature of Massachusetts, and been chosen State Senator, and also elected President of the Senate, he, Cincinnatus-like, greatly preferring the comforts of rural life and domestic tranquillity as more congenial to his taste, relinquished the

turmoil of political life, and devoted as much time as he had at command to Agriculture, Horticulture, and kindred arts.

In 1849, he became the President of the Norfolk County Agricultural Society. In 1850, the Governor of the Commonwealth appointed him Chairman of the Massachusetts Commission to the World's Fair in London; and, in 1853, as another acknowledgment of his agricultural and horticultural services, he was appointed a Commissioner of the Industry of All Nations, in the Crystal Palace in New York City. He was also appointed by the Royal Pomological Society of Belgium—a government institution—the Commissioner for America. He likewise became the main promoter of the Agricultural College established at Amherst, and was elected President of the Massachusetts State Board of Agriculture, and became afterward, during a period of eleven years, a member, by appointment, of the Governor's Council. In addition to all these honors—having suggested a national convention of cultivators—he was elected the first President of the United States Agricultural Society, which was organized at Washington, D. C., in 1852. Under his administration was instituted the "Great National Field-trial of Reapers and Mowers," at Syracuse, N. Y.—the first of the kind in the world. We need not say that Col. Wilder, as a horticulturist and pomologist, has a world-wide reputation. We must not omit also to state that he was elected fourth President of the Massachusetts Horticultural Society, at its eleventh annual meeting in 1840.

Col. Wilder has delivered almost innumerable addresses before the American Pomological Society in many cities. In one of these he said: "Our trees—from the opening bud to the golden harvest—from the laying-off of their gay autumnal livery, and during their rest in winter's shroud, waiting a resurrection to a new and superior life—are all eloquent preachers, proclaiming to our inmost soul,

'The hand that made us is Divine.'

Taught by their counsels, who does not admire the wisdom, perfection, and beauty of this fair creation?—the *tiny bud*, incased in coats of mail so that the rude blasts may not visit it too roughly, rivaling in its mechanism the human eye, and destined to perpetuate its own species distinctive as the soul of man—the *enameled blossom* unfolding her virgin bosom to the warm embrace of vernal air, bespangling the orchard with starry spray scarcely less beautiful than the glittering host of night, dancing in rainbow hues, and flinging on the breeze a fragrance richer than the spices of Ceylon's Isles, sweet harbinger of beautiful harvest—the *luscious fruits*, God's best gift to man, save woman—the *melting Pear*, of rough or polished rind, with sweetest honeyed flavor—the *burnished Apple*, tempting the human taste, from the mother of our race to her last fair daughter—the *royal Grape*, clustering beneath its bower of green, making glad the heart of man—the *brilliant Cherry*, suffused with loveliest tints of rose and white, or dyed in deepest incarnadine—the *velvet Peach*, mantled with beauty's softest blush, and vying with the oriency of the morning—the *delicious Plum*, veiled with silvery bloom over robes of azure, purple, or cloth of vegetable gold."

In the course of his address before the same society at Boston, in 1862, Mr. Wilder uttered these characteristic words: "O, let me be remembered in some beautiful flower, some graceful

tree, some luscious fruit! O, yes, far better than storied monument or sculptured urn, let me be remembered as one who labored to adorn and improve the earth—to promote the pleasure and welfare of those who are to follow me!" In this respect, we are happy to say, he has been gratified, as some seedling flowers bear his name, and also the excellent President Wilder Strawberry.

We had the pleasure of a visit from him and other leading Horticulturists, to this coast, in the summer of 1870; and though he is beyond three-score years and ten, he is so well preserved that we yet hope to see him here again.

We can not close this, our imperfect notice of so elevated and good a man, without quoting a passage from the Boston *Journal of Horticulture:*

"During his leisure hours, he has filled several large folio volumes with his own sketches, delineations, and descriptions of fruits, proved under his personal inspection. This has been the work of a long life. He continues these investigations daily; and it is to be hoped that the public may have the benefit of these studies. He has made the Pear a specialty. His collection of Pears embraces every variety, foreign and native, of note; to which he adds the novelties of every year. Having a correspondence with the most distinguished pomologists of Europe and America, he receives annually all such as are worthy of notice. His collection embraces 2,500 bearing trees—probably 3,000 by this time; and he has had, during his life, more than 800 varieties of the Pear on his grounds. Among plants, the Camellia has been his specialty. He has many hundreds of varieties, thousands of plants, and more than a thousand seedlings—some of which bear the names of himself and family—which he raised from seed obtained by hybridization, of which he has given a published account."

After all that has been thus said, it seems hardly worth while for the humble writer of this to say that he has personally known Col. Wilder's worth, benevolence, public spirit, patriotism, pure morals, amiability, friendship, courtesy, and shining talents, for upwards of thirty years, and has the pleasure, from time to time, of receiving letters from him, offering his hospitalities, and cheering, encouraging, and sympathizing with him in his comparatively poor efforts to follow in the Colonel's illustrious footsteps.

EL ESPIRITO SANTO.

This plant, which bears a flower of such rare conformature, and a name of so much significance, but seldom finds its way to our conservatories, and is entirely unknown to many of our flower-loving friends. Few persons visit in its tropical haunts, and it is only occasionally brought here by chance hands, as a choice gift, or as a matter of curiosity. In these days of "rapid transit," its home in the secluded forests of Central America can not be considered very remote, and it could be easily secured by our florists and incorporated in their selections. It has the distinction of being rare, pretty, and peculiar, and would be a valuable and lovely addition to their floral families. It is my good fortune to possess two plants of this species, and they, like Cornelia's children, are "my jewels." They were brought to me from Aspinwall, in midsummer, carelessly planted in a tin box, the bulbs but half concealed in their native soil, which was porous and sandy. As they were in bud, I left them undisturbed until after they were through flowering. At that time they could not claim to be

"things of beauty," as they were almost entirely leafless, only one possessing a portion of a ribbed and tattered leaf, while the flower stems were long, twisted and devoid of grace; but each bore aloft twelve buds, which to my expectant vision covered all other deficiencies and "hid a multitude of sins." When unbelieving and scornful spectators profanely compared the plants to "old corn-stalks," I exultingly pointed to the clustering buds, and bade them "stand and wait." My anxiety and impatience to behold the flower were soon rewarded, for the largest of the green and waxy-looking buds grew and unfolded with great rapidity; it was marvelous to see the sudden change in their color, from green to white, and a bud which had seemed sealed at night by morning had fully opened its heart, revealing a pure and lovely dove nestling there. In shape, the likeness was very exact and perfect; its breast was spotless, but its wings, which were expanded and upright, were dotted with dark crimson; the head, which was pure and white, was slightly inclined forward toward its breast, and with its little bill of a delicate yellow color, and tiny dots for eyes, was "entire, wanting nothing." Four thick white petals held and supported this beautiful emblem of the Holy Spirit. While contemplating this fair and lovely flower, the name did not sound irreverent, and it seemed to me that the Spaniard pronounced the right title when he called it, in his beautiful musical language, "El Espirito Santo." The native, with religious and poetic instinct, sees in it the type of the sacred Spirit that spreads its silver wings in all hearts that are pure and undefiled. The flowers did not soon wither or fade, and I had the pleasure of watching them unfolding and blooming for several weeks; they fully atoned for absence of foliage and want of comeliness in the plant, and excited much enthusiasm among those who had derided the "parent stalk." When I received these plants I was entirely ignorant of their former surroundings, and of the proper method of culture, but concluded, as they came from a tropical country, they must need great heat and be kept in the very warmest place I could give them, and I made an almost fatal mistake in exposing them to the fierce glare of the summer sun. I found, after a few hours exposure to this heat, that such of the buds as were near opening, or had partially opened, were shriveled and withered beyond recovery. I hastily removed them to the shelter of the shrubbery, where they were screened from the sun, and so saved the remainder of "my doves." I afterward learned from the person who brought them to me, that these specimens were natives of the woods on the Isthmus, and flourished in the deep tangle of tropical growth, and could not, therefore, bear dry heat. As soon as my bulbs ceased to flower, they were transplanted separately, and I am hoping for a re-appearance of my pretty flock, as I believe they blossom once a year. I find that they need a light rich soil, abundance of moisture, and plenty of reflected heat, but can not endure exposure to the direct rays of the sun while they are blooming.—*Ladies' Floral Cabinet.*

GUTTA-PERCHA CEMENT.—Dissolve as much gutta-percha in a mixture of ten parts of bisulphide of carbon with one of oil of turpentine, as will make a thick mass. Clean the leather to be united from all grease, heat the surfaces before applying the cement, and dry under pressure.

AMARYLLIS.*

BY F. A. MILLER.

This is a very charming class of summer-flowering bulbs, though I am sorry to say but very few of them are cultivated here. However, they are beginning to attract attention, and I am sure that they will find their way before long into every conservatory and garden.

There are now some thirty different species, and as many more varieties, cultivated in the various floral establishments of Europe, all of which are good. Most of them are natives of Brazil, and like a moderately warm climate, such as we have here in California. While some of them arrive more readily to perfection if treated under glass, there are others which, like the Lily or the Tulip, succeed best in the open air. A deep sandy soil, enriched with old manure, suits them very well. Their roots require room to spread, and therefore must have good-sized pots if cultivated in the house.

Amaryllis bulbs should have a season of rest; but, unlike the Hyacinth and Tulip, they should never be allowed to lose all their foliage, which renders it necessary to water them sparingly when they are at rest. If they are cultivated in pots, they should be allowed to rest from autumn until March, when they should be placed in a warm situation. As soon as they develop new leaves they require more water, the application of which should be increased as the plant develops itself.

Insects are very hard on the Amaryllis, and to keep them clean of these, is half the battle.

The Amaryllis is propagated by side-roots, which are formed in abundance. It may also be raised from seed, but this process is a rather slow one.

* Natural order, *Amaryllideæ*.

If they are cultivated in the open ground they will not require any particular attention. With cultivation of the soil around them, and with protection from strong winds, they may be expected to do well.

Some of the best varieties are:

A. longifolia rosea, an excellent variety, flowering abundantly.

A. longifolia flore alba, also very desirable and effective.

A. belladonna, several good varieties.

A. atamasco, flowers white, and good bloomer.

A. crispa, flower of a rose color.

A. formosissima, flowering very abundantly, flowers of a rich crimson color.

A. purpurea (*Vallota purpurea*), one of the very best; its most brilliant scarlet flowers are very ornamental.

Pruning Roses.—"Ruralist" writes to the *Rural New Yorker* as follows:

As soon as the frost is out of the ground in spring, and hard freezing weather is past, I commence to prune my Roses. I suppose that every one who has noticed the varying habits of Roses knows the different species or classes require different treatment with the pruning knife. All kinds of summer or June Roses, as they are usually termed, such as Damask, Prairie, Moss, and French, should have the old canes occasionally removed; that is, those that have produced flowers one, two, or three years. Also, all weak, slender branches and canes may be removed, allowing only sufficient to give the plant a good form. The largest and most perfect flowers are usually produced upon the strongest one-year-old canes, and these may be shortened with benefit. Hybrid Perpetuals should also have their canes shortened, and the weak, feeble branches should be cut away, and as a rule,

the weaker the shoot the more severely it should be pruned. Six to twelve inches is long enough for side branches on Hybrid Perpetuals grown as tree or half standards. With Tea-scented, Noisettes, and Bourbons, there is little danger of pruning too severely, because it is the young shoots that produce the flowers, and the more vigorous these start and grow, the more abundant will be the blooms. There is little use to leave a quantity of long, slender shoots upon a plant, expecting that they will produce as many or as perfect flowers as a few strong ones. After Monthly Roses have produced their first crops of flowers in summer, a second may be hastened by cutting back the blooming shoots.

THE BALLOON VINE.—*(Cardiospermum halicacabum.)*—This climbing annual is a native of Florida and Texas, and grows freely in the tropical portions of the country. Its specific name is the Greek term for another plant, but was applied to this vine by Linnæus. It belongs to the same family as that of the Horse Chestnut, Bladder-nut, etc., and is a very interesting plant, and an especial favorite with children, because, when they crush the ripe seed, they burst with an explosive sound.

Its delicate foliage, and the peculiar character of the fruit, recommend the vine to all those who desire low running vines. In its wild state it runs along the ground, or over small shrubs, but when cultivated, it will grow six feet or more in height. Its leaves are handsomely serrated, and are thin in texture, while the flowers are very minute, and grow in axillary clusters, each bearing hooked tendrils, which enable the plant to fasten itself to supports.

The fruit is inclosed in a large bladdery capsule, with a single seed in each of the three divisions, and each seed is marked with a heart-shaped spot which gave it its name, *Cardiospermum*, or Heart-seed.

Like all other tender annuals, it will vegetate much better if the seeds are sown in a hot bed.—*Ladies' Floral Cabinet.*

GROUPING TREES AND EVERGREENS IN LAWNS AND PARKS.

BY E. J. HOOPER.

A lawn or park without trees has almost as cold and dreary an appearance as some of the barren and parched-up hills of California have, devoid of vegetation of any kind except perhaps a few wild flowers, beautiful undoubtedly as these are; hence, all landscape gardeners plant lawns and parks more or less with trees, either single, in groups, or in clumps. A large single tree, for example, a fine specimen of our California White Oak, is an object that has from all ages been regarded by mankind with admiration, for its grandeur, beauty, and usefulness. Hence, in all ages, man has either allowed a few of the wild denizens of the plains, forests, and groves, (which he has cleared for cultivating purposes) to remain for shelter and ornament to his dwelling and grounds; or, if none existed, as in some parts of California, he has planted for the same purpose. Not only was this admiration for and use of trees prevalent in the old times, but it is still more practiced in the present. But unfortunately only deciduous trees will attain such magnitude as to be beautiful and effective objects in landscape, in less than half a century in most parts of the world (although we may in this respect except to a considerable degree our Pacific slope, where vegetation grows so much more rapidly than in most other coun-

tries). It is desirable, even here, in order to obtain effect more speedily, to plant most of our trees of all kinds in groups, and protect them from cattle, till they have grown so tall as to be out of their reach. A group may consist of only a couple of trees, or the number may be extended to half a dozen, or even nine trees, all of which may be arranged in different forms, so that each may have a distinct character. To attain facility in thus arranging requires considerable knowledge and skill, and a prescient eye to the effect of different combinations of figure in groups, with diversity in kinds of trees employed, to produce a predetermined character in the scene. I would advise those who are about to improve new ground to consult with or employ a well-trained and naturally tasty professional landscape gardener—such as F. A. Miller, for instance—(who does not know of this recommendation, and would probably object to it if he were cognizant of it). But, of course, he has made this matter in Horticulture one of his studies.

The greatest beauty of a group of trees is, as far as respects their stems, the different forms they take as they grow into trees. Some, for example, grow quite upright, if ever so close together; others take a slanting direction, whilst in some groups, one tree will grow quite upright, and its neighbor will push out in an almost horizontal position. These different arrangements, or appearances, may be attained in various ways, by planting in different distances from each other. A very pretty group has often been obtained by planting two or three trees in one hole, and allowing them to grow naturally, just as they pleased.

Great diversity of character may be given to groups of trees, and the greater the number (within bounds) of trees, the greater variety of position, and consequently character, may be attained. The grand object of group-planting, however, is connecting the groups together in various views, and, at the same time, leaving a sufficient breadth of the grassy part of the park open for grazing. Groups should always be connected in the distance with the natural woods, groves, or belts, but should never be planted in the deep sinuosities of the margin of such a mass of trees; they should rather be placed near to the projecting swells, and by that position they will seem, in different views of them, to form a part of, and increase the depth of, the natural grove or belt. In such a position, a single tree should be planted beyond the group into the park, still more to increase that character. Single trees, in general, are very objectionable. It has been, I am sorry to say, a very common practice by many planters to introduce into park scenery a great number of these single trees, with a view of effecting a character which can only be obtained by grouping. I once witnessed in the East an example on a large scale of this dotting with single trees. The planter was not content with planting the trees (Oaks) singly, and at equal distances, but he actually planted every one of them on large hillocks, three or four feet above the surface. The insipidity and absurdity of this dotting arrangement was absolutely sickening. How differently Nature arranges the group, the glade, and the thicket, every lover of rural or forest scenery is aware. Let such formal landscape gardeners go into the wild woods and groves, and observe some of our best natural and even artificial places and parks in California, where groups of noble trees abound, and let them study and reflect whether the sprinkling and dotting of

trees will ever produce such fine effects.

The kind of trees for grouping depends much upon the soil and situation. In high dry soils, the Scotch Fir, the Elm, the Silver-leaved Poplar, Eucalypt, with some of the Australian Evergreens, Acacias, and Pepper-tree. In lower situations, the Oak and the Ash, with some of the Pine tribe, form fine groups. But nearly all trees do well here and in almost any situation.

In planting them, I would advise each group to be of one kind, or very nearly so. An outside tree of a very large group may be of a different sort, to give variety; and that outside tree should be next to an adjoining group of the same kind, which would give the idea that it had straggled from it. Some groups should have the tallest trees in the centre, and the outside, or points, should be lower, or branched to the ground. Other groups, by way of diverse character, should have the centre the lowest, so as to appear like two groups united by low trees. In fact, the great aim of the planter should be to have every group of as different a character as possible from its neighbor. You never see, in old parks in Europe or America, or wild forest lands, two groups alike.

The undulations of the ground, in the park or lawn, will generally give the planter opportunities of placing his groups in good positions. The tongue of a piece of elevated ground is a good position for a group, or on the side of a rising ground will answer for one or more admirably, especially if there is a mass of natural groves on the top; only avoid all stiffness and formality, not only in the number of trees in each group, but also the distance from each other, and the masses of which they are to seem a part in various points of view.

WEEDS.

[Concluded from page 264.]

But I fear that I may be giving a wrong impression about foreign weeds. It is a fact that many of the most troublesome weeds of this country are foreign importations. More than this, the same is true of most countries settled by Europeans during the last few centuries. It is so in South America, in Australia and New Zealand, in St. Helena, and elsewhere. Introduced weeds spread, and more or less choke out the old native species. I have illustrated how fast some European plants have spread in America. There are just as marked examples of American plants spreading over the Old World. The Evening Primrose (*Œnothera biennis*) is here a coarse, roadside weed, rather common, yet seldom abundant. It was, perhaps, carried abroad as an ornament or curiosity.

It has spread over much of Europe, crossed the Bosphorus, and is traveling eastward across Central Asia. Meanwhile it is spreading northward from India and westward from China. It is widely known in Africa, in Australia, New Zealand, the Sandwich Islands, and I know not how much farther.

As we see it growing in waste places here, among other weeds, if asked to pick out the plant most likely to spread, it would, perhaps, be the last one we would guess as the one to thus wander over the earth, and thrive in such varied circumstances.

I have been giving you two classes of facts side by side; one showing how fast foreign weeds sometimes spread in countries not their home; the other, how few true weeds become eradicated after they once have a good foothold. I told you at the start that I had no golden rule by which we could gain an easy victory over them. But our labor

can *overcome* them, and hold them in check, even though we may not rid ourselves entirely of them.

How shall we fight them to the best advantage? Well, we must vary our treatment according to the kind we have to deal with. No kind should be allowed to go to seed if one can help it. With them, as with most of our plants, the leaves are the organs in which the sap is changed, where the processes go on which have been compared to both digestion and breathing in animals; and, moreover, they are the organs that take in certain elements from the air. Hence, deprive them of these organs; cut them, hoe them, dig them; where a green leaf appears kill it if we can. This is usually most effective when the plants are young, but sometimes it is most so when the plant is in its most vigorous growth. This is particularly so of those plants whose roots are perennial. I once knew a man to sell the secret of "how to kill Canada thistles." The price of the valuable knowledge was ten dollars. The secret was, to cut them on the fifteenth day of June and the fifteenth day of September. In that locality, these were the dates when the first and second crops were usually just coming into flower, and the plant in most vigorous growth, and some seasons I have seen large patches subdued by this treatment. A better rule would have been to cut them just as the earliest heads were in bloom, whatever might have been the day of the month, or the age of the moon.

Your secretary has brought in here some of your most common weeds. Two that he says are quite troublesome here, I have never heard of being troublesome elsewhere. One of them I have spoken of. The other he calls White Bush, and says it is bad for sheep. It is the *Andromeda ligustrina* of botanists. A different shrub is usually known as White Bush in other localities. The others are of varying degrees of troublesomeness, and need treatment according to the species. (Their names were given, with some remarks about each.)

In closing, I can only repeat what I have already said; that weeds must be fought; if we yield they will soon conquer our crops. It is one of the ways man has to struggle with Nature, and probably always will. We are told that when Adam was expelled from that favored garden where we infer there were no weeds, he had to till the ground where "thorns also and thistles shall it bring forth to thee," and I fear that this will be the lot of the latest of his descendants who chance to be farmers. We know that with labor and a constant fight we may hold them in reasonable check, but after this very labor, good tillage in other respects must follow. Let us then keep up the fight, as cheerfully as we can, remembering that "eternal vigilance is" not only "the price of liberty," but is also the price of clean land.

Facts About the Siphon.— In June last, John Wells of Truxton, Cortland Co., N. Y., laid a half inch lead pipe according to the following survey bill: The ground rises from the spring in a distance of 34 rods 10 links, 17 feet 5 inches; from thence, in a distance of 65 rods, there is a fall of 30 feet, leaving a balance of 12 feet 7 inches below the spring. Ever since the water was started with a pump, it has run a steady and beautiful stream. In covering the pipe, sawdust was first put on, to prevent sharp stones from cutting or otherwise injuring it. Before covering, all defects in the pipe were carefully mended. — *Rural New Yorker.*

YUCCAS AS ORNAMENTAL PLANTS.

Yuccas are all more or less showy plants, belonging to the great Lily family. For many years I have been raising seedlings of our hardy native species, not only because I admire them as ornamental plants, but by adopting this mode of propagation one stands a chance of producing new and improved varieties. I have at this moment several dozen seedlings of the *Yucca filamentosa* in full bloom, and this spring flowers produced on stems five or six feet high are not surpassed in elegance by anything in my garden at this time. The flowers are mainly pure white, although an occasional variety will be found with a slight yellow-green or reddish tinge. In form they are usually oval, the ends of the petals turning back only when the flowers are nearly ready to drop off. They also vary somewhat in size and form. I have raised varieties of the species named above with flowers that were perfectly globular in form and not more than an inch in diameter, and others that were two or more inches in length and expanding about the same. A good, vigorous stem will produce from 200 to 300 flowers. The plant is evergreen, the leaves are about an inch and a half wide and a foot or more in length, from the edges of which hang numerous thread-like filaments, hence the specific name—*filamentosa*. This species is found growing in Virginia, south and westward to Texas, and is known by several local names, such as Bear-grass, Adam's Needle, etc., etc. There are several local wild varieties, which were described by our early botanists as distinct species. The narrow-leaved Yucca (*Yucca angustifolia*) grows in great abundance on the plains west of the Mississippi. It is smaller than the former, the leaves not more than a half inch wide, distinctly edged with white. The flowers are yellowish-white. It is quite hardy in our Northern States, and well worthy of a place in every garden. There are also many other species, natives of the extreme South and Mexico, not hardy at the North. The seeds are borne in large pods and several hundreds in each. They are flat and thin, resembling in form those of our common Lilies. The plants may be propagated by division of the large, fleshy, tuberous roots, but I prefer to grow them from seed for the sake of variety. The seed grows almost as readily as corn, and may be sown in the fall or spring. The plants require considerable room, therefore it is well to transplant the seedlings when a year old, placing them at least two or three feet apart. As the plants come into bloom just after the first flush of spring flowers is past, they are welcome additions to our gardens.

ALFALFA HAY—HOW TO CURE IT.

A writer in a Sacramento, Cal., paper says: As many farmers are cutting Alfalfa for hay who have had no practical experience in curing the same, a few words of instruction may not be out of the way. In the first place, to make good hay, the Alfalfa should be sown so thick on the ground that its stalks will crowd each other, and thus be forced to grow somewhat spindling. A single bunch of Alfalfa grown from a seed placed in the ground so as to have a plenty of room to stool, will produce large, coarse stalks, and if allowed to stand and mature its seed these stalks become almost like dry sticks. In this condition the hay becomes comparatively of but little value. Therefore the seed should be sown so thick as to

cause a pretty even growth all over the ground, and to create a pretty strong sod. The stalks will then be thin and slender, and the leaves will bear a good proportion to the stalks themselves. Alfalfa should be cut as soon as it has fairly commenced to blossom, and should be allowed to remain spread upon the ground as left by the mower only long enough to wilt it well. It should then be raked into winrows and allowed to remain in this condition only long enough to guard against heating when put into the cock. It should then be put into the cock and dried so as to prevent heating and mildewing when in the stack, and no more. When packed in the stack or mow it should be sprinkled with salt pretty freely—say two or three pounds to a ton.

Alfalfa cured in this way is among the most valuable varieties of hay we have for horses, cattle or sheep. Those who have fed their working teams upon it have found it to be fully as nutritious as the best of oat hay. When horses have become accustomed to eating it they will prefer it to all other kinds. For milch cows good Alfalfa hay is next to green grass in value, and sheep will eat it when they would leave oat or barley hay. Our own experience in feeding stock of all kinds has been considerable, and we do not hesitate to pronounce good Alfalfa hay more hearty and nutritious than the other varieties of hay now in this State. While we make this assertion, we are fully aware that there are those whose experience has been equally as great as our own who differ with us. The reason of this difference arises more from the manner of curing and handling the hay than from any other circumstance. If allowed to be dried in the sun as spread out on the ground by the reaper, the stalk not only becomes dry and brittle and loses much of the gluten and saccharine matter that it naturally contains, but the leaf almost entirely drops off, even while handling it sufficiently to transfer it into the barn. If then it is handled over to bale and send it to market there is nothing but dry sticks left, and it is justly condemned. The great secret in making good Alfalfa hay is in the time of cutting and manner of curing.

FORESTS AND FRESHETS.

At the current meeting in Portland of the American Association, Dr. Hough, of Albany, read a paper on the rain-fall and its relations to forests. He had carefully analyzed the returns of the rain-gauge for a term amounting to 2,000 years, and from these he had attempted to deduce a law of secular changes in the fall of water. But the returns did not justify it. They show marked variations from year to year, and reveal irregularities at many localities, and they also indicate great tendency to drought for years together. Dr. Hough strongly reinforces the doctrine of the relation of forests to the flooding of streams, and in so far bears out the argument of the State Commissioner in reference to the preservation of the Adirondack woods. In a cleared country the water flows quickly away to the streams; these are at once at high-water mark, and then a season follows when water is not to be found. The actual effect of the evaporation of rain-drops on the leaves and the chemical action which goes on in the plant is obvious in the humidity and temperature of the atmosphere where trees exist. One can observe this in a casual glance at open fields; the sun-burnt look of one which is treeless is in contrast with the fresh and vernal appear-

ance of the inclosure in which clumps of trees are found. Houses shaded by trees are damper than those not so protected. In the driest season, one who walks in the country will notice a sensible change in passing from a treeless waste to the vicinity of a forest or into the forest itself.

The necessity of tree-preservation for economic uses can not be overrated. The supply of lumber is rapidly failing. In Europe the forests are regulated by law, and crops of trees are harvested in rotation and upon a definite and prearranged system. France has altogether 13,226 square miles of protected forest. The code by which they are governed dates from the time of Colbert, who was a master hand in regulation and state interference. He showed as great wisdom in this code as in any other branch of his system of administration. By the Colbert Code, "Oaks were not to be felled till ripe, that is, able to prosper another thirty years." The French have carried their system to Algeria, and have already added several rainy days to July and August. In this country, the French system is impossible. The state owns no forests, and the work of preservation and careful husbanding must proceed from the people. One generation will plant for another, and the small sapling of to-day will be a forest monarch fifty or a hundred years hence. No crop would be more valuable; no investment more certain. As Dr. Hough says: "It must come to be understood that a tree or a forest planted is an investment of capital, increasing annually in value as it grows—like money at interest—and worth any time what it has cost, including the expense of planting, and the interest which this money would have earned at the given date." Waste spots should be planted and the increased value of farms, whose roadsides are lined with trees, should be made apparent to all. There is wealth, and health, and comfort in this suggestion.

Ostrich Feathers.—Ostrich feathers, in commerce, are classed in the following order, as regards value: First, those coming from Mogadore; second, those from Egypt and Barbary; and third, the South African or Cape feathers, for which Graham's Town is the central market. These are long, and, therefore, are esteemed for many purposes, but have not the delicacy and elegance of the barbules of the North African feathers. The Aleppo feathers used to be considered the type of perfection of Ostrich feathers, but they are now so scarce as to be seldom met with in commerce. For the "bous" or tail feathers of the Ostrich there is an enormous demand, and perhaps more of this kind are sold than any other. Northern and Southern Africa are the quarters from whence supplies are obtained. There are feather merchants in Mogadore and other Barbary States, who are in communication with all the districts of the desert where the bird is found. The price of Ostrich feathers in a series of years—taking into account quality and demand—ranges from $40 up to $275 the pound weight; but their first cost is, of course, much lower. The import trade in England is in comparatively few hands. There were received in 1870 66,063 pounds of Ostrich feathers, of which more than half were black Ostrich. Vulture plumes, or "bastard Ostrich," as they are called in trade, are employed in large quantities in France, and form the most important branch of the commerce in feathers there. They are obtained from the American Ostrich (*Rhea Americana*),

which inhabits chiefly the pampas and vast plains of Patagonia, the Argentine Confederation, and the adjoining republics. It is smaller than the true African Ostrich, is without a tail, and the feathers are not of the same rich and costly kind. The Patagonians and Indians make plumes, parasols, and many beautiful ornaments of them. The feathers are imported in the rough from South America, under the distinction of large and small Vulture. The former are commercially known as "dry" or "white foot," the lower part of the plume being white, and the head black. They are used for coiffures, the white part in its natural state, or dyed some light color, and the dark part as black. The bad feathers are worked up into *plumeaux* or dusting-brushes. The small Vulture feathers are exclusively used for head-dresses, and are rather higher in price than the large ones.

SEA KALE.

Crambe maritima, 15th class, *Tetradynamia* of Linnæus, and nat. order *Cruciferæ* of Bernard de Jusseau. A native of Britain. A perennial; one of the names applied by the Greeks to the Cabbage, and especially to the marine Cabbage. *Crambe maritima* grows on sandy shores in the west of England, and there the common people have from time immemorial been in the practice of watching when the shoots and leaf stalks begin to push up the sand in March and April, when they cut them off under ground, as is done in gathering Asparagus, and boil them as greens. About the middle of the last century the plant was introduced into gardens, grown in deep sandy soil, and blanched either by sand, ashes, litter, or by covering by flower pots, earthen pots made on purpose, or any opaque cover. It is almost as universal in good gardens as Asparagus, and like it, is forced either by taking up the roots, and planting them on a hot-bed or in the border of a forcing-house, or by covering or surrounding them in the open garden. Before covering with warm litter, each plant, or stool of plants, is covered with an earthenware bleaching-pot or a wicker case to keep off the dung from the young shoots, and to insure their being blanched, and to prevent the young shoots from being scorched by the heat of the manure. No plant is so easily forced, and, unlike Asparagus, it yields produce the first spring after raising from seed.

Crambe Tataria, a native of Siberia, introduced 1789, a perennial, is called by the Hungarians *tatar-kenzer* or Tartarian bread, and its roots stripped of the bark and sliced are eaten with oil, vinegar and salt. The boiled root is sweet, and eaten by children; the young shoots are boiled like those of Sea Kale, and have an excellent taste, but are stringy, though they would not be if well cultivated, which the plants appear to deserve. I have seen the first species cultivated in European gardens, and it is indeed a great delicacy for the table, but have not seen a single dish of it in all my travels in America.

A Subscriber.

The Rose Tree and Its Legends.—The Greek poets say that the Rose was originally white, but that it was changed to red—according to some, from the blood of Venus, who lacerated her feet with its thorns when rushing to the aid of Adonis; and, according to others, from the blood of Adonis himself. The fragrance of the Rose is said by them to be derived from a cup of nectar thrown over it by Cupid; and its thorns

to be the stings of the bees with which his bow was strung. Another fable relating to the birth of the Rose is, that Flora, having found the dead body of one of her favorite nymphs, whose beauty could only be equaled by her virtue, implored the assistance of all the gods and goddesses to aid her in changing it into a flower, which all others should acknowledge to be their queen. Apollo lent the vivifying power of his beams, Bacchus bathed it in nectar, Vertumnus gave its perfume, Pomona its fruit, and Flora herself its corona of flowers. Anacreon makes its birth coeval with those of Venus and Minerva:

"Then, then, in strange eventful hour,
The earth produced an infant flower,
Which sprang with blushing tinctures dressed,
And wantoned o'er its parent breast;
The gods beheld this brilliant birth,
And hailed the Rose—the boon of earth."

HINTS ABOUT GROWING CUCUMBERS.—Take a large barrel or hogshead, saw it in two in the middle, and bury each half in the ground even with the top. Then take a small keg and bore a small hole in the bottom, place the keg in the centre of the barrel, the top even with the ground, and fill in the barrel round the keg with rich earth, suited to the growth of Cucumbers Plant your seed midway between the barrel and the keg, and make a kind of arbor for the vines to run on. When the ground becomes dry, pour water in the keg in the evening; it will pass out at the bottom of the keg into the barrel, and rise up to the roots of the vines and keep them moist and green. Cucumbers treated in the foregoing manner will grow to a large size, as they are made independent of drought or wet weather. In wet weather the barrel can be covered, and in dry the ground can be kept moist by pouring water into the keg.

Editorial Portfolio.

FAIRS AND EXHIBITIONS.

The third annual exhibition of the Bay District Horticultural Society took place, as announced by advertisement; and although a brilliant success, as far as the display of plants, fruits, and flowers is concerned, it was a most disgusting financial failure. Strange that the people of San Francisco, expensive as they are in the coarser amusements, can not appreciate the more refined pleasures of such exhibitions, which, in other portions of the civilized world, are so liberally patronized.

The Secretary of the Society not having furnished us with his usual report, we are necessitated to postpone further comment to our next number. We, however, subjoin the opening speech of Professor Carr.

OPENING ADDRESS,

By PROF. E. S. CARR, *of the University of California.*

For the third time, this beautiful retreat from the dust and confusion of the city is opened to the public; and for the third time, you have honored me with an invitation to speak a good word for the Society, and the interests of Horticulture on this coast. I am glad to serve you to the best of my ability; but, in view of what you have done and are doing, and of the fact that you are opening this Exhibition in spite of the discouragement which attended the last, I certainly feel unequal to the occasion. I would have preferred that some other *doctor* should administer the sharp and bitter tonic, which the people of the Bay District deserve, if they allow so good a thing as this Society to languish for want of support.

When I look at this noble and beautiful State, and think of the almost boundless prodigality with which Nature has endowed it, I feel that there ought to be a larger, grander humanity developed here than anywhere else on the planet. For, first of all, we have

the soil and climate best adapted to the accumulation of wealth, and, therefore, the best possible conditions for the growth of knowledge, science, art, and taste among the masses of the people.

"Here Nature shall condense her powers,
Her music, and her meteors,
And lifting man to the blue deep
Where stars their perfect courses keep;
Like wise preceptor, lure his eye
To sound the science of the sky,
And carry learning to its height
Of untried power and sane delight."

But when we see how large a proportion of the intelligence, the brains, which should be brought to bear upon the development of these vast resources of material, intellectual, and spiritual power, are devoted to other ends, I fear it may be said of us: "Eyes have they, but they see not; ears have they, but they hear not;" and that we be found worshiping the golden calf, while our unappreciated prophets are listening to the voice of God in the mountains, and tracing His hand in manifold works of beauty and grace.

It is pleasanter to praise than blame; and there is so much to praise in Californian energy and enterprise, that criticism is apt to fall pointless, like the grumblings of discontent. But one of the great essentials of improvement is to be aware of our own deficiencies.

We are often told that indifference to everything which does not exhibit quick returns is the vice of new communities. So it is; but not, therefore, an excusable vice. A new State in this half of the nineteenth century is the last onward step of human progress, and, therefore, we have a right to look for the best of everything, or at least the good healthy germs from which the best is to come.

To-day, while thousands of our American people are crowding the thoroughfares of Europe, and millions of American gold is lavished in foreign lands, I feel that we are rich enough to possess the best which Europe has to offer, if we were wise enough to feel the need of it.

Do you suppose the Russians would have their winter gardens, and the Germans their open-air concerts, and every European capital its great libraries, and museums, and art galleries, if the people did not improve these opportunities of culture? Do you suppose the American in Kew Gardens, who would honestly prefer a Red Cabbage to a Cabbage Rose—whose ear is trained to Yankee Doodle, and not beyond it—with money enough in his pocket to buy a grand duchy—is truly the peer of the German, content with his black bread and beer—with simplicity and cleanliness—if to these his gardens, his evening concerts, the glorious legacies of art and of imperishable thought, be added?

What good thing is there in that old world to which such numbers are flocking which we could not readily command, if we would? Is it education? Think what teachers have voluntarily come to us—their Lieber, their Agassiz—glorying in the wider possibilities open to them here! Is it art? Think what that commercial Florentine people, with their citizen rulers, accomplished for art in a single century; simply because they were wise enough to choose things which are of lasting value! Think how every handicraft flourished there; how trade prospered and commerce increased—impelled by an enlightened public spirit! This, more than anything else, is what we need in California.

I wish that some of the eloquence expended in every political campaign, in showing how the liberties of the people are threatened, and their substance wasted, could be used in showing that money is always *saved*, when used to promote education, art, and science—the great conservators—and to multiply all the rational enjoyments of human beings. I begin to feel that, between the enormous expense of keeping ourselves from foes without and foes within, we can hardly get time to make ourselves worth saving. But, lest you should take these as *after-election views*, I will leave them, and speak of "predestination"—that of the Bay District Horticultural Society.

You all know that some twenty years ago there was formed right here, among the money-changers, a little Society, which met in a dingy upper chamber, with a turnip for a candlestick, and an Indian basket for a ballot-box, yet steadily proclaimed itself the California Academy of Sciences. Among that faith-

ful and far-sighted few was the worthy President of this Society. He was often mistaken, I have no doubt, for a miner seeking his last chance, when shouldering his blankets and pick, he went forth into the hills. But the kind of gold which Dr. Kellogg finds never creates a panic on Wall Street; and I fear it will be a long time before there is a general run on any of his banks. Since he is not in his place this evening, I may as well speak of him and of the service which he has rendered to Botany and Horticulture. There is not a public garden in Europe, and perhaps not one of any importance in the world, to whose treasures he has not contributed; nor any large herbarium in which plants of his collecting, from Alaska to Mexico, may not be found. A year ago, when the friend of all science and of all progress stood among us—and it was said of him that he "never had had time to make money"—I thought that distinction belonged equally to some of our own scientists; and that the fact should be known that "Mammon-worshiping California" had nevertheless a devoted band of laborers for science and the future.

I have alluded to the history of the Academy for your encouragement—to show what steady perseverance will do. Little by little that Society worked its way—so slowly that the cobwebs gathered over its collections, and so silently that every now and then some of the contributions to it re-appeared as new discoveries—until it had accumulated so much that the law, "To him that hath shall be given," began to operate, and suddenly, Mordecai sitting humbly at the gate is he that the king delighteth to honor. The Art Association has had a shorter probation; but its history also proves that any similar institution will flourish here if it has vitality enough to make its claims known.

California is not wanting in pride in her business enterprises. She only needs to believe in some of the higher laws of life—"that lovely things are also necessary; flowers as well as corn; the wild birds and creatures of the forest as well as the tended cattle"—and the field of her energy will soon include these.

"The *people* of this country—I speak this word in that latest sense which discriminates between the users and the used—are, for the first time, wide awake to their own interests." We shall soon see what manner of public work they propose doing. Since every great step in progress is the result of individual effort, all the beginnings of this new exodus will be made in the home. There never were truer words said than these, to the English people: "What is chiefly needed to make the world better, is to show the quantity of happiness that may be obtained by a modest competence." I believe the results of the new movement will be more tasteful homes, then better and more beautiful villages, and farms which have less the appearance of deserts.

I am glad to see the farmers of California organizing for mutual protection and improvement, because the matter of protection can be speedily adjusted, leaving only that of improvement to be attended to. How much Horticulture will have to do with that! I have passed a good many farm-houses in California, wondering what punishment could be worse than to be condemned to live thus a single year. I never saw in any State more attractive rural homes than many about our bay, or many such farms as Gov. Bidwell's at Chico, or Mr. Beard's, at Mission San José—places which nobody would think of calling "palatial." They are just about good enough for a man who loves and honors his calling, and enriches his life as well as his purse. The charm of these representative homes is largely due to the horticultural adornments which are felt to be indicative of the taste of their owners.

I know a man who goes every morning to a mechanic's work, yet gives an hour or so daily to the little greenhouse, built at odd moments and with small savings. I do not know if he is an exhibitor here, but there ought to be a thousand exhibitors out of these ranks. I never saw in any rich man's conservatory such a splendid show of Calceolarias, or such perfect bits of experimental work, as in his. He gets a crop, my friends, off that single town lot, which I do not think he would exchange

for a San Joaquin principality, if he were corralled, as many of our farmers are, on a great bare wheat ranch, from which every flower of the field had been exterminated.

There is not a mechanic in San Francisco who can not have his bay-window fernery, his little rock garden, a tiny fountain murmuring a perpetual song, if he will. It is the mission of your Society to create an appetite for these things—an appetite which is fed by blossoms as well as fruits.

I hear it whispered, gentlemen, that your next exhibition will take place in a new hall, to be built by the Mechanics' Institute. Now, let me make a prophecy. Persevere in holding your semi-annual exhibitions—in introducing every new and valuable acquisition to out-door and in-door gardening—and five years will not have passed before some "greedy monopolist" will disgorge capital enough to build you as good a hall as that of the Massachusetts Horticultural Society. Yes, and better; for here you can at a comparatively small expense sustain a winter garden, and make it self-supporting by admission fees and rents of stalls, and reserve plenty of space for competitive exhibitions also. About three years ago some enterprising citizens of Frankfort, Germany, made a similar experiment, which has proved a great success—their admissions amounting to six hundred persons a day, and their company's shares commanding a considerable premium.

There was no feature of the last exhibition I enjoyed so much as the children's flower-show, and I am glad to see it repeated here. I hope it may help to bring about a larger admixture of Natural History studies in our schools, and help in creating a generation of liberal patrons of Floriculture.

A higher appreciation of all the arts can come only through education—first in the home, then in the school. A recent English writer says: "How few mothers can tell their children the names of the wild flowers and what they are good for—of the garden plants and what is good for them, what will feed, and what will kill them; or the names of the birds, the trees they like to build in, the homes they build, their abodes in winter, and how they procure their food. Though Nature is especially the child's book, we have few mothers and teachers prepared to interpret it." I am sure the same can be said of us; and this lack of early training explains the public apathy in respect to works of taste.

I beg leave to call the attention of this Society once more to the importance of co-operating with the State Agricultural Society, and similar bodies in other States, to secure needed legislation for the protection and preservation of our forests. I do not think the public are aware that this Society made strenuous efforts in this behalf at the last session, and that a bill was passed for the encouragement of forest and timber-tree culture, which, on account of some objectionable features, failed to receive the signature of the Governor. The people of other States are waking up on this subject. New York will be asked to set aside a vast territory, worthless for agriculture, for a State forest. Much of it has already been skinned by lumbermen, but Nature, if permitted, will repair the loss. The Adirondack region, filled with lakes, and containing some of the noblest mountain scenery, is to be restored to the native inhabitants—the moose, bear, otter, the birds and fishes—so nearly exterminated elsewhere.

The Yellowstone Park, the great pleasure-ground of the nation, is now being surveyed, and in time will become the resort of travelers from all parts of the world; yet it is no rival of the incomparable Yosemite, which is intrusted solely to the keeping of this State. Every good citizen should feel an interest in the right management of this trust, and in the unimpaired transmission of that perfect piece of Nature's handiwork to future generations. The men are not yet born who can improve Yosemite and the Mariposa Grant; and whatever accommodations the public may require should be concealed rather than obtruded there. These two parks are the only forested lands in the United States exempt from spoliation. It has been shown by carefully gathered statistics that, at the present rate of con-

sumption of timber, fifty years will consume all the forests east of the Mississippi; and the history of all other countries, where the natural conditions have been so overthrown, proves this to be the least of its consequent evils. Millions of acres in this State, worthless for any but forest uses, are being converted into wastes, uncheered by verdure, and torn during the rainfall by devastating torrents. Every shrub and green thing is swept bare, as with the besom of destruction, by the flocks and herds. All over Europe it has come to be considered the legitimate function of governments to regulate these things. The forest laws of France restrict *pasturage*, as well as wood-cutting; and I wish we might have a similar application of science to statesmanship here.

I think we need a little legislation on another subject to which I would invite your Society to lend its influence. The great importance of the Grape-growing interest—and, now that economical modes of fruit-drying have been adopted, the fruit-growing interest—makes of special importance the "ounce of prevention" of those insect pests which have cursed other States. With increased facilities of communication, our exemption from these is sure to be short-lived. The bark-louse is already at home in our fruit-trees, and the chinch-bug is sure to visit our fields. That dreaded scourge of the vine, the Phylloxera, may in a single season destroy one of our most important industries. It is time for us to recognize the importance of an office, common in the Eastern States, viz: that of *State Entomologist*.

Lest I should anticipate the Governor's message in these suggestions, I will not amplify them. I expect to see this Society becoming more and more influential in forming correct public opinions as well as public taste. Through exhibitions like the present, and through its publications, it can not fail to become an important instrumentality in ushering in the period of universal plenty, peace, and good will.

A CAR-LOAD of San Diego honey was recently sent East, from this city.

STATE AGRICULTURAL SOCIETY'S FAIR.—The Twentieth Annual Fair of the California State Agricultural Society took place at Sacramento in the third week of September, and proved a grand success. All branches of agricultural and horticultural industries were well represented. The people, who flocked there by thousands, were well pleased with the management and display; and the officers of the Society proclaim the Fair a financial success, which must be encouraging to everybody interested in Agriculture.

From all accounts, the exhibit of stock was the finest ever seen, the races were exceedingly interesting, and the display at the Pavilion gave entire satisfaction.

The horticultural departments were well represented, and we consider it our duty to review these more particularly, leaving it to others to discuss the merits of the stock, of the races, and of agricultural products in their broader sense.

The leading horticultural features were Fruits, Vegetables, and Flowers. The exhibit of Fruits was very creditable, but did not quite come up to the show of last year; this, however, was entirely due to the total absence of eastern fruits, which formed a very interesting and instructive feature last year. The *Vine Growers' and Wine and Brandy Manufacturers' Association* made an excellent showing of Grapes. Mr. Young, of Sonoma County, had a very extensive collection of fruits, well selected and nicely arranged. This was Mr. Young's first attempt to exhibit his fruits, and he succeeded well in demonstrating that Sonoma County can raise as fine fruit as any other locality in the State.

The display of Flowers and Plants was much larger and better than here-

tofore, and attracted a great deal of attention. The principal exhibitors were E. E. Moore, and Miller & Sievers, of San Francisco; A. Ebel, gardener to E. B. Crocker, Esq., Sacramento, amateur; and Mark Hopkins, of Sacramento, amateur. Mr. Hutchinson, of Oakland, exhibited some very good cut Dahlias. Mrs. B. B. Cutter, of Sacramento, showed some exquisite Tuberoses, tastefully arranged, with well-colored foliage of the tri-colored Cockscomb.

The display of Vegetables was unusually fine and varied, and Messrs. F. Gabrielle & Co. deserve much credit for the superior arrangement.

We are happy to say a few words of praise for the magnificent display of canned and preserved Fruits, Jellies, etc., by Mrs. J. B. Odbert, of Sacramento. Her collection embraced two hundred jars and glasses, of one hundred and sixty-nine varieties of fruits and jellies, in great perfection.

The following awards have been made in the various horticultural departments:

GREEN FRUITS.

D. C. Young, Sonoma—Best display of Apples, $30.

Ira S. Bamber, Placerville — Best twelve varieties of Apples, $15.

R. Williamson, Sacramento—Best six varieties of Apples, $10.

Dr. W. S. Manlove, Sacramento—Best three varieties of Apples, $5.

D. C. Young, Sonoma—Best display of Pears, $30.

D. C. Young, Sonoma—Best twelve varieties of Pears, $15.

T. K. Stewart, Sacramento—Best six varieties of Pears, $10.

D. C. Young, Sonoma—Best three varieties of Pears, $5.

I. S. Bamber, Placerville—Best display of Peaches, $15; best six varieties of Peaches, $10; best one variety of peaches, $5; best display of Plums, $15; best five varieties of Plums, $10.

D. C. Young, Sonoma—Best one variety of Plums, $5.

I. S. Bamber, Placerville—Best green figs, $5.

D. C. Young, Sonoma—Best display of tropical fruits, $20; greatest number and best specimens of Oranges, $5.

D. C. Young, Sonoma—Lemons, $5.

R. Williamson, Sacramento — Best display of Seedling Fruits, $10.

D. C. Young, Sonoma—Best display of Fruit, $50.

FLOWERS.

Miller & Sievers, San Francisco—Best collection of Flowering Plants in bloom, $25.

E. E. Moore, San Francisco—Best collection of ornamental Foliage Plants, $25.

Miller & Sievers, San Francisco—Best collection of New and Rare Plants, $15.

Miller & Sievers, San Francisco—Best collection of Roses in bloom, $15.

Miller & Sievers, San Francisco—Best collection of Fuchsias in bloom, $15.

Miller & Sievers, San Francisco—Best collection of Cut Flowers, $10.

Miller & Sievers, San Francisco—Best collection of Bouquets, $10.

E. E. Moore, San Francisco—Best collection of Australian Plants, $10; Hanging Baskets with Plants, $10.

Mark Hopkins, Sacramento — Best collection of Plants for conservatory, greenhouse and window culture, $15.

A. Ebel, Sacramento — Australian Plants, honorable mention.

Joseph Hutchinson, Oakland—Dahlias and Pinks, special premium recommended.

Mrs. B. B. Cutter, Sacramento—Basket of Tuberoses, special premium recommended.

Mrs. J. H. Carroll, Sacramento—Very large Bouquet, special premium recommended.

THE VINE GROWERS' ASSOCIATION. — The following is the annual address of Mr. G. G. Blanchard, the President of the Vine Growers' Association.

Ladies and Gentlemen of the Association: The season in its rounds of bounty and of weather, are scarcely more constant and punctual than we. Each returning fall, with its fruits, brings

us together for congratulation and advice, and affords us opportunity to give the "reasons why," and occasion for the "thus you see," of the year's employment. This annual "come and go," this periodical "fetch and carry," in ways many and various, contribute to our prosperity as individuals, to the prosperity of our State, and our social progression and happiness.

One more year have we watched, considered, and dressed our growing vines; one more year have we racked and re-racked, tested and tasted its liquid product. For one year more have we applied to the culture of the one, and the improvement of the other our entire stock of knowledge and ingenuity; and now, here, upon the altar of this industry do we offer up the result, and ask the descent of the latent mysteries of vine culture and wine making upon our offering.

While we have been thus nobly engaged, the contending political forces have been busily applying their dogmas to public needs, and untiring in their efforts to secure our recognition and support. Besotted selfishness and unholy avarice are the seeds of the evils to which we are the prey. Our wines are delicious, our fruits both palatable and nourishing; our presence upon the soil makes it inviting and gives increase to the national exchequer. Yet, as a class, the vine grower has but a small voice in the political economy of the State or nation.

There will be produced this year, from twelve to fifteen million gallons of wine, of the value of three and a half millions of dollars; besides about two million pounds of Grapes for table use, worth one-quarter of a million; and one-quarter of a million pounds of Raisins.

There are not within this State to exceed forty thousand acres planted to vines. Of hill and mountain land alone, which is eminently susceptible to the cultivation of vines, there are more than eight millions of acres.

With reasonable cultivation, and without diminishing any of the other productions of the State, we have acres sufficient to produce annually from the vine more than $200,000,000, and these lands are mostly suitable for any other production as a staple. Our highest prosperity will never be reached, until the occupation of these lands is made an element of legislation; until the subject shall receive encouragement and aid. Commerce is not to be forgotten, manufactures should not be overlooked, nor our mining interests neglected; neither should this greatest and most natural resource of the State — vine growing—be made the subject of legislative oppression.

The husbandman is the Atlas, upon whose back the world's life is supported, and he has ever, with silence and humility, borne the burden. While exemption from taxation has been the order, his results have been listed for assessment. His surplus is the subject of tariff upon tariff.

Our requirements have never been understood by political economists; our liquors are gauged when new and at highest proof. No account or allowance is made by the officer of revenue for evaporation, leakage, or deterioration. Our wines and liquors stand to us as our growing crops, and only ripen at from three to five years after the time they are manufactured; yet, while in this state of incubation, they are listed and taxed from year to year, when they only have value as they mature. The present system of taxation is unjust and oppressive, and affords but poor encouragement to industry. The burdens rest almost wholly upon the owners of real estate, while bankers, brokers, and those who deal in securities and exchanges, are exempt from taxation. The value of all the real and personal estate of the United States in 1860 was $16,086,616,068, (which included slave property); in 1870 it amounted to $30,822,535,140, leaving out the slave—more than doubling in a decade. This increase is unprecedented in history. Yet, this fabulous increase can not be said to result from an increase of farming area or farm products, for the improved lands of the United States, in 1860, amounted to 407,212,538 acres; while in 1870 there were only 407,735,041 acres, showing an increase in the ten years of only 522,503 acres. These figures demonstrate that the increase has been prin-

cipally in lands not agricultural, and of personal property not the product of the soil. While farming lands and farming products have increased, yet it was disproportionate to the increase of other lands and other commodities, considering the cheapness of lands, the extent of our arable domain, and the better price of its products. Query—Does this show a healthy state of things? I think not. When in a purely agricultural country agriculture is at a double discount—when men will forsake the plow for a standing-place in the city, and abandon the law of induction applied to the vegetable mold, for the chance of a freak in the dice of fortune applied to the shadow of a vision at some curb-stone, the one must be shadowed with burdens that frighten, or the other be gilded with reliefs that dazzle. All burdens are distasteful. But the most unsavory is American taxation. The toiler has no time to hide, in fact, he can not hide his effects from revenue officials, for the most part they are bulky and just about him; while he that luxuriates in his percentum and illicit traffic may escape the tax gatherer. Our system of political economy does not stop to consider, with any degree of niceness, the wrongs done a class whose very business makes it unlikely that they will raise any very potent voice in their own behalf. The law makers are, not as a class, those upon whom the hand of government falls heaviest. Ay, they too often are those whose hand is most heavy upon the government—and upon whom the government has no hand. Extravagance is the rule, economy the exception. A true citizen never advances his own interests at the expense of the community in which he lives. Query—Are those bad citizens who do? But extravagance always leads to corruption, and both are fueled and fanned by party bias and party rule. Honest difference of opinion, springing from diverse conceptions of untried theories and national polity, is always entitled to respect; but political distinctions, originating in the vanity of wealth, a debauched sense of class superiority, fevers of ambition, or in the advantages of a popular spasm, should be intolerable, and condemned as factional.

National prosperity, by a false estimate, is said to overlay a nation's wealth; and with equal falsity is it said, that the prime duty of a government is to preserve and aggregate its wealth.

When a government has no higher object than monetary advancement, its stability is enervated, its health devoid of vigor, and its longevity problematical. Prodigies of virtue, statesmanship, and valor seldom spring from places of luxury. The sons of poverty, for deeds of honorable merit and renown, always defy and rout the powers of opulence. The voluptuous myrmidons of Persia, for valor and virtue, paled into littleness before the peasant youths of humble Sparta. The Roman invincibles carried their victorious eagles into the rich but festering Egypt and Persia, where opulence and venality was the rule.

Principles of stainless loyalty and political virtue are deep-rooted and immovable in the poor. Preservation of material wealth is not the motive which sends a yeoman to the front; his battle song is of liberty and the republic, instead of gold and silver. A city burned, or a fleet scuttled, to the true defender, gives no qualms of property lost. The opulent commercial sons of Carthage, for gold sold her liberties and independence, despite the entreaties of her toiling people.

Before Spain was gorged with the metals of Zacatecas and Potosi, her enterprise and her virtue walked hand in hand. Her moral power was only equaled by her national activity.

The mistaken idea that wealth was national prosperity, lowered the Spaniard from his superior rank, and his government from a first to an insignificant power.

Adherence to the soil is a specific remedy for an unstable condition of public mind. The plow and reaper agitate nothing but earth. He that causes a blade of grass to grow where none has grown before, is greater than he who commands an army. Wealth produces pride of dominion, and pride of dominion is corrupting. Wealth furnishes the vitals of corruption; venality is its most nourishing aliment, and contamination its most refreshing atmosphere. Reunions like this tend to uni-

versalize class knowledge and disseminate the principles of industrial virtue. They clear away the miasma arising from pools of sloth and from political defections. They dignify and give notoriety to that which without them would be devoid of recognition or respect, beyond a common and passing mention. Aggregated we present a powerful front, and the knowledge of all becomes the knowledge of each.

One of our contemporaries sneers illiberally because it recognizes in our columns some excellent articles which itself had appropriated from the Report of the Commissioner of Agriculture for 1870. We allude to description of Gum plants, and similar articles. Are we not equally at liberty with itself to draw from such sources, such information for our readers as we hope may be acceptable? We do not pretend to supply, nor does the public expect, all original matter; and when we extract, we consider it rather a compliment than otherwise. If at any time any article is not duly acknowledged, it is an oversight of our compositors which we regret. It is a pity that our contemporary can not be gentlemanly; when we presume it desires, as we do, to be read by the ladies.

WOODWARD'S GARDENS.

To the horticulturist and the botanist these gardens afford ample scope for study. The plants are kept in fine order, and exhibit great improvement under the judicious management of their present conservator, Mr. Brown.

The extensive collection of Orchidaceous plants is highly interesting; we also notice additions among the Caladiums — indeed the display of foliage plants generally is very fine. The Begonias are well represented. We are eagerly expecting the opening of the *Cereus grandiflora* (Night-blooming Cereus), and hope not to be disappointed as we were last year, by some vandal who destroyed the bud.

CATALOGUES RECEIVED.

We have received No. 4 of *Vick's Floral Guide*. It is handsomely illustrated and contains much useful and interesting information. This completes the quarterly series for the present year. We are happy to find that it has proved a success. This catalogue comprises a copious list of excellent flowering bulbs at moderate prices. We commend it to the careful perusal of our readers.

Also *Descriptive Catalogue of Langdon Nurseries*, C. C. Langdon & Co., near Mobile, Alabama. This comprises Fruit and Ornamental trees, Grape-vines, Roses, Evergreens, Bulbs, etc., and is at once copious and useful.

The Flower Garden, Beach, Son & Co., 76 Fulton Street, Brooklyn. This is at once an illustrated magazine of Floral progress and a useful priced catalogue of Trees, Shrubs, Plants, Bulbs, and Seeds.

FAVORS RECEIVED.

The Overland Monthly for October.—This is a very interesting number. "Prison-life in China" portrays a lamentable state of affairs in that country. "Seeking the Golden Fleece — After that the Deluge," by Dr. J. D. B. Stillman, presents a vivid picture of the flood of 1850 at Sacramento. "Aboriginal Shell Money," by R. E. C. Stearns, gives evidence of much careful research, and is both curious and highly interesting. Many of the other articles are well worthy of perusal. "Etc." as usual piquant; "Current Literature" caustic, but nevertheless judicious.

OUR EXCHANGE TABLE.

Among the numerous and ever welcome periodicals of our own class which from time to time present themselves, much to our gratification, at our editorial table, we call the attention of our readers and of the public in general to the following, as well worthy of public patronage:

The Horticulturist—monthly—Henry F. Williams, New York. $2.50 per annum. An excellent magazine.

The Gardener's Monthly—its specialty Horticulture and Floriculture. Every gardener, whether amateur or professional, should read it. Editor, Thos. Mehan. Published monthly by Brinkloe & Marot, Philadelphia. $2 per annum.

Moore's Rural New Yorker—weekly, illustrated. Very good. Published by D. D. J. Moore, N. Y. $2.50 per annum.

Ladies' Floral Cabinet—beautifully illustrated, full of practical information and pleasant reading matter. 75 cents per annum. Published monthly by H. F. Williams, N. Y.

Country Gentleman—weekly journal, replete with much desirable information. Publishers, Luther Tucker & Son, 395 Broadway, Albany, N. Y.

Sir John Lubbock states that the *Stresiptera* or parasites found on bees and wasps, pass through all their transformations in the bodies of these insects. The males and females are very dissimilar; the former are active, minute and short-lived, while the females are bottle-shaped, never leave the body of the insect, and, except that they occasionally thrust the head of the bottle out between the abdominal rings, they appear to be almost motionless.

WORK FOR THE MONTH.

BY F. A. MILLER.

We have so far advanced toward the rainy season, that irrigation may be entirely dispensed with, so far as trees, shrubs, and vines, both ornamental and useful, are concerned. The cool nights are longer, and in the vicinity of the Coast Range the atmosphere is damp enough to cover all sorts of vegetation with a heavy dew. The lawns in San Francisco, Oakland, and other localities near the coast, will do well enough without any further irrigation; while those of Sacramento, Stockton, San José, and other inland localities, may be treated with an occasional sprinkling during the month of October. Lawns ought to have a good top-dressing of manure just at the beginning of the rainy season, and I think the sod should be allowed to rest for a few weeks, preparatory to the application of a top-dressing.

It is very important that all ornamental trees, which are not sufficiently established to support themselves, have proper stakes given them, so that they may withstand our heavy winds. It is a common thing here, that, after the ground becomes thoroughly saturated with water during the winter months, trees are blown over for want of proper support. The present is the most favorable time to guard against this.

Flowers begin to be scarce articles, and as it is expected that the first rain will bring out new growth and fresh flowers, this would be the most favorable time of the year to resort to trimming and pruning. But let it be done by some one who understands his business. Some of our so-called gardeners apply the pruning-knife indiscriminately to Roses, Lilacs, Deutzias, Snowballs, and other flowering shrubs, and

manage to cut off all the wood which is expected to flower. Some Roses do better by close pruning; others do best if left alone. Your gardener should know something about this. In regard to Lilacs, Deutzias and Snowballs, nothing should be cut off except suckers and superfluous wood. If you can not trust your gardener, it will be far better not to touch these shrubs with the knife.

Another lot of Gladioli may now be planted for winter flowering.

It will yet be time to sow Pansy seed for winter and spring blooming. It is best to sow them in a box, which may be covered at night with a pane of glass or canvas. If placed in a warm and sheltered place they will be fit to transplant in four to six weeks. A bed of Pansies is always most desirable, and we can have them here in the greatest perfection during our winter months.

Dutch bulbs, such as Hyacinths, Tulips, Narcissus, Crown Imperials, Snowdrops, Lily of the Valley, Crocus, and others, have come to hand and may be planted at any time, particularly those which are intended for pot-culture in the house or under glass.

I hear of late much call for Tuberose roots. Most of our amateur gardeners seem to think of planting bulbs when they see the flowers in our floral establishments. All this is wrong. If you wish to cultivate Tuberoses in the open air, you must obtain and plant them in spring, in order to have them in bloom in August, September, and October. If they are planted now, they will not bloom until next year, and may rot in the ground before that time. The only way to plant Tuberoses, at this time, is to have them in pots or boxes, and place them in the house or under glass; for the purpose of forcing them for winter blooming. I would say, however, that the single white variety is better for that purpose than the double flowering.

If you wish to cultivate Hyacinths, Crocuses, Tulips, etc., with success, do not delay planting them until you see them in bloom in our floral establishments; but go to work now. Obtain your roots at once of some responsible dealer, who will be willing to give you the necessary information as to proper treatment.

Continue to give your plants in the conservatory, greenhouse, or window, constant airing during warm and pleasant weather; but do not expose them to draughts or strong winds.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

In writing on the subject of fruits, it naturally suggests itself that many new and valuable varieties of these as well as of vegetables have been produced, as it has appeared accidentally, in different localities of the State. Besides the common productions of the temperate regions, various kinds of tropical fruits also, such as the Pineapple, Banana, Mango, Cocoanut, Plantain, Loquat, Chinese Guava, the Date, and others. In view of this fact, if the farmers and horticulturists, and their societies, as now organized and being organized, will take hold of these new and valuable articles—and some others that might be named—and give them a thorough trial, even if only in a small way at first (and doubtless this is the safest plan), in different localities and soils, keeping a correct record of the circumstances connected with each individual experiment, they will perform a work that will, probably, bring vast and immediate benefits to themselves and

indirect good to the whole people. With especial reference to tropical or semi-tropical products, we here venture the opinion that our rich bottom-lands, particularly those in the southern portion of the State, where the facilities for irrigation are at hand, will produce some varieties, at least, of the semi-tropical fruits of the more torrid zones, not only as good in quality, but as abundantly as the best localities of some of the islands of the Pacific, the East and West Indies, and some parts of Africa. Fruit of the common kind is so abundant now, that it is very desirable not only to raise the very choicest, having the highest flavor, fine appearance, and complexion, but the first-class species of each, in order that it may be profitable. Apples and Peaches of the most common qualities go far ahead of the demand; and even the wholesale price, in some instances to our own knowledge, will not pay for the expenses of gathering, putting in boxes, and forwarding to our markets. Many of the kinds which are most prized will not stand the effects of transportation to the East or to other places so as to pay the packers, as has been lately proved. It is only a very few of them that can stand the wear and tear of time and distance, and remunerate their proprietors. It is chiefly in some cheap and effective drying and canning processes—better and less expensive than those already practiced—that we can look forward to improvement in profits for some time to come. But when any particular product is raised in excess of the requirements of home consumption, it is certainly of great moment to produce less of this and more of those products which we are still importing, and for which there is still an unsupplied *home* market; for, as has been observed, by a competent authority lately: "Of all the markets in the world, a *home* market is the best for any country; a foreign market is only good when the home market is over-supplied, to consume the surplus." Thus, we should produce, as we have said before, more various kinds of fruits for drying, canning, and pickling; and also we may add, as we have happened here to think of it, more of all the nuts, such as the English Walnut, Almond, Pecan, and Peanuts, etc. And, in general, it may most truly be said, that besides a larger variety of all kinds of fruits, our products of all sorts should be more diversified, so that individual success should not consist so much in large possessions of land for grain, or in immense monopolized wealth for the few, but in a general well-doing with medium possessions, and reasonable wealth for all. And these are subjects to which we invite the attention of those who have the best interests of California at heart; those who have lately been elected to make the laws and administer the government.

For the encouragement of cultivators of tropical fruits, and to cite an instance of the probable success of Orange culture far north of Los Angeles, we will here state that in the garden of Judge Sexton were raised last year Orange and Lemon trees loaded with fruit; while in the garden of Mr. Glaucauf, in the town of Oroville, a day's journey by rail from Sacramento, an Orange-tree about twelve years old, bore and ripened the same year 400 as fine Oranges as were ever produced in Los Angeles, and they are of the same variety. A tree, also, on Bidwell's Bar, some six miles above Oroville, bore 1,500 Oranges, as good as any grown anywhere. These are significant facts, and tree-horticulturists in the Sacramento Valley and elsewhere of the same climate, and in-

deed all over the State, should benefit by them, and at least make some small experiments in the same sort of fruits. Owing, however, to the burdens of the internal revenue and the high cost of freight about Oroville and those parts, Grapes for wine and brandy, etc., do not pay the producers, though they might for table and raisins. In many localities in the Sacramento and San Joaquin valleys (at any rate with irrigation) can be raised besides all the ordinary fruits, such as Apples, Peaches, Pears, Quinces, Plums, and small fruits and berries, the Olive, Orange, Lime, Citron, Figs of several kinds, Pomegranate, Mulberry, English Walnut, Filbert, etc. But let us make a statement of those things which we find now existing in most abundance in our fruit and vegetable markets, and their condition, and some of their prices.

By the 22d of last month, all the common fruits of the season had found their way to the stalls; Quinces — the latest—having just about that time come in. Prickly Pears were then quoted at 25c. per pound. Oranges were then scarce, but since much more plentiful. Lemons, also, were nearly out of market in the latter part of August; but Limes were abundant. Plums were worth, by the box, from 7 to 8c. per pound — since somewhat less, especially for the rather dry red sorts—the more juicy and finer-flavored, as the Yellow Egg, Prince's Imperial Gage, and the Green Gage or Claude Verte, being, of course, higher in price.

Blackberries and Strawberries might be considered, last of September, out of season.

Apples have declined considerably in price since last month; the best being $1 per box; ordinary lots, of which there are too many, being as low in many instances as 60c. per box.

Grapes remain at last month's prices 10 to 20c. per pound. But this fruit is every day becoming, as the season advances, abundant.

Apricots have long disappeared, and Peaches can not last much longer—the clingstones coming in, in large numbers. The common varieties of freestones are as low as 8 to 12c. per pound, or about $1.50 per basket. Clingstone Peaches are considerably higher.

There is now, at last, becoming a tolerable demand for Quinces. The price is rather nominal, but they are selling generally at about 10c. per pound.

In the vegetable market, Winter Squashes are quoted at 20c. per pound, and Summer Squashes at 4c. per pound. Pumpkins are out of season. Potatoes have declined from ½. to 1c. per pound, and Lima Beans have depreciated from 2 to 3c. per pound. Tomatoes are 2c. per pound less. Good Green Corn is quotable at 25c. per dozen. Rhubarb is not to be had for any price. There is no variation in the prices of other varieties of Vegetables.

Bartlett Pears are in good demand, and prices are sustained. Seckel Pears have been received in plenty, September 16th. The steamers continue to bring small lots of Los Angeles Lemons, which, owing to the absence of other kinds from the market, bring high prices. Crab Apples are plentiful at 6@8c.; Huckleberries 20c. per pound.

About the latter part of last month (September), there came forward Strawberries in large quantities — the fourth crop — and being in fine condition, met with ready sales.

Peaches, with the exception of a few from the mountainous districts, are now about out of the market (October 6th).

Plums and choice Pears are scarce. The first Winter Nelis Pears of the sea-

son came in the first week of October; but not being yet mellow, are not much in demand.

Apples are abundant (October 5th), and very reasonable in price. The last steamer from the South brought a few boxes of Lemons, Citrons, Pomegranates and green Walnuts, all of which came to an appreciative market.

We quote the different varieties of Grapes as follow: Mission and Sweetwater, 5@8c.; Black Hamburg, Black Malvoisie, and Rose of Peru, 8@10c; Muscat of Alexandria, Tokay, and Black Morocco, 15@20c. per pound. We quote Smyrna Figs, 35c. per pound. Apples, by the box, delivered, at 75c.@$1.50; Pears, $1@$2. Plums retail at 10@15c. per pound; Bananas, 50@75c. per doz. and $3@$5 per bunch; Strawberries, 15c. per pound.

The following are the prices at which some of the leading articles in the vegetable market are retailing: Green Corn, 25@30c. per dozen; Antivie, 25c. per dozen; Colrabi, 10c. per bunch; Black Radish, 20c. per dozen; Mint, 15c. per bunch; Onions, 4c. per pound; Pickling Onions, 5c. per pound; Shalots, 25c. per pound; Egg Plant, 8c.; Okra, 10c. per pound; Kale, 50c.; and Celery Root, 75c. per dozen; Red and White Cabbage, $1 per dozen; Cabbage Sprouts, 8c. per pound; Asparagus, 50c. per lb.

Interesting News for Ladies.—Ladies who wear chignons, as well as the bald of the other sex, will be glad to hear that there is every prospect before long of hair being grown in the garden, and transferred by an easy and pleasing process to the head. It seems that cuttings of hair, properly treated, will strike like Geraniums, and a *savant* in Kentucky has, according to the New York *Tribune*, discovered that by inserting the cut end of a hair into a kind of paste made of two vegetables and a simple chemical, it can be made to grow, and be thence transplanted successfully to a scarified skin. In fact, all that is necessary is a small head-rake, sufficiently sharp in the tooth to scrape the skin off the scalp in little furrows; the hair should then be at once inserted in the wounds, and personal beauty is thus reduced to a mere question of agony. Wig-makers will not like this, but it is impossible to deny that it will be a vast improvement on present arrangements; moreover, lovers may not only exchange locks of hair, but actually engraft these souvenirs on each other's heads, and for this reason alone the discovery will be hailed with rapture by the romantic and affectionate in every quarter of the globe.

The Monarch of the West Strawberry, as grown in New Jersey this year, is described as follows: "It is a fine-looking berry of very large size; one of those left with us measured five inches in circumference. The flesh is solid, the flavor exquisite, and the color a bright red, just such as is calculated to please the eye of fastidious purchasers. It is quite prolific, late ripening, and from its solidity well calculated for marketing purposes. The berries grow in clusters from six to twelve, presenting a very rich and beautiful appearance. The stalk is a very strong one, and capable of bearing the heavy crop of fruit from the ground, a very important and desirable feature in sandy soil. Some of the leaves were five inches in length. Mr. Perry asserts that, side by side with his finest Wilson's Albany, it commanded fifty cents per quart, while the Wilson was slow sale at fourteen cents."

Editorial Gleanings.

When to Cut Grass. — An English paper says: If for horses at work, the grass should be mowed after it has passed out of blossom, when the seed is in the milk, because at this stage it contains the largest quantity of nutritious substances, such as sugar, starch, gum, etc., which are of the highest value, contributing much toward rendering hay such a choice article of food. If for cows, it should be cut earlier, so as to leave the grass as nearly in the green state as possible—soft and succulent—because in this condition it contains a larger quantity of juices which assimilate well in the animal, and produce a greater flow of milk. If for young stock and sheep, the grass should be mowed when in full flower, because after flowering, and as the seed forms and ripens, it is exposed to loss in its nutritive matter by the seed being shaken out and the brittle foliage breaking off during cutting and making, and the grain itself, especially the rye grass, becoming almost a woody fibre, losing nearly all its sap and sweet aroma. In short, hay made from over-matured grass is no better than ordinary straw, if indeed so good.

Fecundity of Fishes.—It is said that probably about 60,000,000 or 70,000,000 codfish are taken from the sea annually around the shores of Newfoundland. But even this quantity seems small when we consider that the cod yields something like 3,500,000 eggs each season, and that even 8,000,000 have been found in the roe of a single cod! Other fish, though not equaling the cod, are wonderfully productive. A herring six or seven ounces in weight is provided with about 30,000 ova. After making all reasonable allowances for the destruction of eggs and of the young, it has been calculated that in three years a single pair of herrings would produce 154,000,000. Buffon said that if a pair of herrings were left to breed and multiply undisturbed for a period of twenty years, they would yield a fish bulk equal to the globe on which we live. The cod far surpasses the herring in fecundity. Were it not that vast numbers of the eggs are destroyed, fish would so multiply as to fill the waters completely.

It is a curious fact that science has often to adopt measurement and not weight as a standard unit. There is, indeed, no such thing as absolute weight. It is only the result of gravity. A mass of matter, for instance, is nearer the centre of the earth at the poles than at the equator, and would weigh a quarter of a pound less at the latter than at the former. Therefore, if we ordered a quantity of goods to be sent from some place near the poles toward the equator, and they were weighed by a spring balance, they would not weigh so much on reaching their destination as they did when they were shipped; and yet the quantity of matter would be exactly the same.

The Struggle for Life among Plants. —Each plant endeavors, almost consciously, to destroy his neighbor, to occupy his ground, to feed upon his nutriment, to devour his substance. There are armies and invasions of grasses—barbarian inroads and extirpations. Every inch of ground is contested by the weeds; the forest is a struggle for precedence; the wars of the Roses are a perennial feud. The serenest landscape, the stillest woodland, are the mortal arena of animal and vegetable conflict.

The spittle-like substance found upon grass, weeds, and frequently upon various kinds of trees, is produced by a genus of insects belonging to the *Cercopis* family of the order *Homoptera*, or whole-winged bugs. The larvæ of these bugs suck out the juices of the plants, and, after passing through, it is deposited about them in the form which has been termed frog-spittle; hence the more common name of these insects, "Frog-spittle bugs." Flies, no doubt, frequent these bunches of spittle, but do not produce it, any more than those which frequent a sugar hogshead have anything to do with the manufacture of sugar. There are many species of these frog-spittle insects. — *Rural New Yorker.*

The conversion of White Pine into paper pulp, has been going on to a limited extent for a number of years, but it was only about two years ago that it was found possible to use Red Pine for the purpose. The difficulty lies not so much in the bruising and mashing of the wood as in extracting the rosin, and tar, and such matters, in which the Red Pine abounds so much more than the white variety. The process is the invention of a Scotchman, and a London firm is busily engaged in introducing it into Sweden; they have already started several works in different parts of the country. The manufacture, when fully developed, will be a great thing for Sweden, with her enormous forests of Red Pine.

Antiquity of Flax.—Dr. Oswald Heer, of Zurich, has published a paper "On Flax Culture in Prehistoric Times." He finds the original home of the Flax to be along the Mediterranean. It can be shown that the plant was cultivated in Egypt 5,000 years ago. Flax is found among the remains of the oldest pile-dwellings in the Swiss lakes, where neither Hemp nor Wool has been discovered; and it is probable that the old lake-dwellers received the Flax plant from the south of Europe.

Ripening Pears. — Josiah Hoopes, after alluding to the common test of ripeness for picking, namely, gently raising the fruit to see if it will readily detach itself at the stem, directs that the specimens be placed thinly and evenly on the floor of a cool room, on a blanket previously spread, and then covered with a second blanket. He says, "In a short time the effect of the treatment will be apparent in the most golden-colored Bartletts, and rich, ruddy-looking Seckels imaginable. Pears perfected in this manner rarely have the mealiness of their naturally ripened companions; nor do they prematurely decay at the core as when left on the tree."

METEOROLOGICAL RECORD,

For the Month Ending Sept. 30th, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 508 Battery Street (opposite the Custom-house.)

BAROMETER.

Mean height at 9 A.M.		30.04 in.
do	12 M.	30.04
do	3 P.M.	30.03
do	6 P.M.	30.01
Greatest height, on the 5th at 12 M.		30.19
Least height, on the 26th at 6 P.M.		29.79

THERMOMETER.

(*With north exposure and free from reflected heat.*)

Mean height at 9 A.M.		59°
do	12 M.	64°
do	3 P.M.	64°
do	6 P.M.	60°
Greatest height, on the 21st and 23d at 12 M.		70°
Least height, on the 24th and 29th at 6 P.M.		55°

SELF-REGISTERING THERMOMETER.

Mean height during the night	46°
Greatest height, on nights of 25th and 26th	53°
Least height, on nights of 8th, 15th and 17th	42°

WINDS.

North and north-west on 1 day; south and south-west on 3 days; west on 26 days.

WEATHER.

Clear on 6 days; variable on 20 days; cloudy on 4 days.

OLD AVENUE OF OLIVES,

San Luis Obispo, California.

THE

California Horticulturist

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MORE VARIETY IN OUR FLOWER GARDENS.

BY F. A. MILLER.

With much truth it is said that both the climate and soil of California offer superior facilities for the growth and development of all kinds of vegetation; yet it is an unmistakable truth, that our people are very slow in taking advantage of these favorable circumstances at our command, and which would be instrumental in making us a prosperous and happy people. Our prosperity would doubtless be much enhanced if our fields offered more diversified productions; and the gardens surrounding our homes would give more satisfaction and comfort if the Flora was represented by a greater variety of plants and flowers, which our climate permits us to cultivate successfully, without running the risk of losing them during the winter months, as our eastern friends frequently do.

There are a few gardens in our State which have been planted with some care and judgment, but nine-tenths of them are made up of Gum-trees, Pines, Monterey Cypress, Acacias, Roses, Fuchsias, Laurustinus, and Geraniums — all of which are very desirable, and I would not like to see a garden without them; but there is something more wanted to break this tiring sameness, and to give variety to our surroundings, in order to produce a more pleasing effect, such as California only is capable of exhibiting.

The reader, undoubtedly, will ask here, "What is wanted to produce the desired effect?" To answer this question is my present purpose.

I wish to say a few words first in regard to ornamental and shade trees. The Eucalyptus and Acacia thrive with us remarkably well, and they are, indeed, charming trees, well worthy of cultivation; so is the *Cupressus macrocarpa*, (Monterey Cypress), and the *Pinus insignis*, (Monterey Pine); but, really, I think they are too abundant in our gardens, compared with other trees. I am aware of the fact, that near the coast evergreen trees do much better than deciduous trees, on account of the very severe winds and our peculiar climate; and for these reasons they are preferred. I shall therefore confine myself to evergreens, and would recommend the following very meritorious kinds:

Grevillea robusta is a most magnificent tree, its foliage being very ornamental, graceful, and effective. This tree is not very abundant at our nurseries, but

some of them may be always had at reasonable prices. They thrive admirably well in our soil, and in a few years make a very handsome tree.

Banksia Australis is another very desirable ornamental tree, and should be in every garden. This is also somewhat scarce, but may be had at most of the nurseries at a reasonable charge.

Corynocarpus lævigatus is a magnificent tree. Its dark-green foliage has a bright metallic lustre, and always looks clean and refreshing.

The *Brachychiton acerifolia* is a very remarkable ornamental tree, with bold and striking foliage, which has the form of the Maple-leaf, but is persistent. It bears very showy bright-red flowers, making the tree a most conspicuous object from a distance. A few specimens may always be found in some of our nurseries.

The well-known *Magnolia grandiflora* should be in every garden. It thrives well here and makes one of the best ornamental trees, its foliage and its flowers being highly decorative.

The *Cryptomeria Japonica*, the *Schinus molle*, (Pepper-tree), the *Thuya gigantea*, (from Oregon), the various kinds of *Araucarias*, the *Madroña*, (native of California), the *Abies Douglassii*, and others of the same genus; the *Eucalyptus amygdalina*, *E. Viminalis*, *E. Risdoni;* all are very pleasing trees, and well adapted to our coast.

Next to trees come the various shrubs, of which an indefinite number might be cultivated in our gardens, and which would be likely to do well here.

It seems that *Laurustinus* and *Pittosporums* are in great majority everywhere. Certainly they are excellent shrubs, and we can not do without them; but let us have here and there something else, which promises to do as well and gives us more variety.

The *Polygala* is a beautiful evergreen flowering shrub, and one which meets with favor everywhere. It has a neat habit, is always in bloom, and can be pruned and trimmed into almost any shape or form.

The *Ericas*, of which we now have a number of excellent varieties under cultivation at the principal nurseries, is altogether too rarely met with. As an evergreen flowering shrub, surely, it has no superior; its foliage and flowers are exquisitely graceful, and it grows as well as the Laurustinus with us. I hope our nurserymen will introduce a larger number of varieties of this beautiful shrub. When first introduced, it was erroneously treated as a greenhouse plant, but since then, it has established itself as perfectly hardy. Its flowering season being through the winter months, it is particularly desirable.

The *Bouvardia* is one of the most precious flowering shrubs, and although it is yet treated by most of our nurserymen as a greenhouse plant, its hardiness is fully established. We set about fifty plants in open ground in the autumn of '72, and although they were very small, they survived the winter, and are now flowering exceedingly well. The delicate wax-like flowers of various shades and colors are very effective and cheerful. I would like to see them in every garden.

Indigofera Australis is a very pretty shrub, with handsome purple flowers and graceful foliage, nearly always in bloom.

The *Deutzias* of various sorts, the well-known *Lilacs*, the *Spiræas*, the *Wiegelia rosea*, the *Snow-ball, (Viburnum opulus)*, are all most desirable flowering shrubs, and although they are deciduous, they are, during the spring months, of great value to the flower-garden. The pruning of these decidu-

ous shrubs is not well understood by those who make the rounds here as the so-called "job-gardeners;" and the best advice I can give to those who cultivate them in their gardens is, not to let their gardeners touch them with the shears or knife, unless it is for the purpose of removing suckers from the ground, or such wood as is positively too abundant or in the way. It is the last year's growth that produces the flowers, and by cutting this away there can not be any flowers.

The *Daphne*, a most exquisite evergreen flowering shrub, and rarely met with, will thrive here in the open air. Its flowers are very sweet-scented.

The *Diosma alba* is equal to any of the very best of flowering shrubs. Its pretty white flowers are exquisitely fragrant; it is perfectly hardy.

The *Cestrum aurantiacum* is a lovely shrub, producing elegant clusters of orange-colored flowers.

The *Chorozema*, frequently treated as a greenhouse plant, is perfectly hardy. It is a most profuse flowerer during the winter months, and very desirable.

The *Swainsonia*, the *Lantana*, the *Habrothamnum*, *Besberis*, *Cratœgus*, *Cuphea*, *Hydrangea*, and *Escallonia*, are all shrubs of great beauty, and hardy beyond a doubt.

I would also call special attention to the *Bursaria spinosa*, of which only one good specimen seems to be growing at Woodward's Gardens. This is a most lovely shrub, of graceful appearance, and its pretty white flowers are very ornamental. Plants may be had in most of our nurseries.

In conclusion, I wish to call the attention of the reader to the *Azalea* and *Rhododendron*, both of which are flowering shrubs of extraordinary beauty, and ought to grow here in the open air, if their cultivation was once thoroughly understood. Some difficulties seem to exist in their culture, but my opinion is, that these difficulties may be removed by judicious treatment. I am not prepared to say positively what treatment they do require, but I have sufficient reason to believe that our soil and water in San Francisco are not exactly adapted to them. It seems, however, that a few experiments would be followed by a good result. Azaleas and Rhododendrons should grow as readily here as Fuchsias, and will eventually prove even hardier. I hope that some of our nurserymen and amateur gardeners will give the matter some attention; and I anticipate a good result.

[To be continued.]

Fruits of Siam.—Siam is verily the queen of the tropics in regard to the abundance, variety, and unequaled lusciousness of her fruits. Here are found those of China, greatly enriched in tint and flavor by being transplanted to this warmer climate; and those of Western Asia, in this fruitful soil far more productive than in the sterile regions of Persia and Arabia; while numberless varieties from the Malayan and Indian archipelagoes, united with the host of those indigenous to the country, complete a list of some two hundred or more species of edible fruits. In this clime of perennial freshness, trees bear nearly the year round, and so productive is the soil that the annual produce is almost incredible. The tax on orchards alone yields to the crown a revenue of some five millions of dollars per annum, as I was informed by the late "second king" of Siam. It is not unusual to find on a single branch the bud and blossom, together with fruit in several different stages. Thus, at the merest trifle of expense, a table may be

supplied during the entire year with forty or fifty specimens of fresh, ripe fruit. Among these are many varieties of Oranges and Pineapples, Pumeloes, Shaddocks, Pawpaws, Guavas, Bananas, Plantains, Durians, Jack-fruit, Melons, Grapes, Mangoes, Cocoanuts, Pomegranates, Soursops, Linchies, Custard Apples, Bread-fruit, Cassew-nuts, Plums, Tamarinds, Mangosteens, Rambustans, and scores of others for which we have no names in our language. Tropical fruits are generally juicy, sweet, with a slight admixture of acid, luscious, and peculiarly agreeable in a warm climate; and when partaken of with temperance and due regard to quality, they are highly promotive of health. For this reason Buddhists regard the destruction of a fruit tree as quite an act of sacrilege, and their sacred books pronounce a heavy malediction on those who wantonly commit so great a crime. One who has tasted the fruits of the tropics only at a distance from the soil that produces them, can form no conception of the real flavor of Plums and Grapes that never felt the frosty atmosphere of our northern clime; of Oranges plucked ripe from the fragrant stem, and eaten fresh while the morning dew still glitters on the golden-tinted cheeks; of the rare, rosy Pomegranate juice, luscious as nectar.—*Lippincott's Magazine.*

Training Petunias.—A writer in the *Garden* says that a fine effect is obtained by his method of training Petunias. He procures a number of hazel rods, each about two feet long, bends them like croquet hoops, and drives both ends into the bed, placing them at suitable intervals all over it. On these he ties and trains his Petunias, which blossom more abundantly than usual under this treatment. We have seen Petunias successfully treated as if they were Sweet Pea vines, and trained on a slanting trellis. The trailing habit of this plant, especially late in the season, is not always sufficiently considered.

TAKING UP AND CUTTING BACK FRUIT-TREES AT PLANTING TIME.

BY E. J. HOOPER.

As the planting season is near at hand, I have concluded that a few practical observations, concerning the lifting and pruning of young fruit-trees, is not out of place in this our November number of the Horticulturist. There is one thing respecting fruit-trees which is deserving of more attention than it practically receives. I do not apply this so much to the heads of firms, (although they should see and insist upon it), as to their foremen and those working under their instructions; and that is, that fruit-trees should be taken up with more care than is generally practiced under what is called the drawing system, by men who, it may be, are only employed for short periods, and who feel no particular interest in the way the work is done. I have seen beautiful fruit-trees sent with their roots so chopped and ruptured, and also packed in such dry material, that those fine young trees—say two years of age—(and that is as old as they should be purchased for all practical purposes), were scarcely so good as healthy maiden plants wrought in that or the previous season. There may be a chance, even for such trees, if planted very early in our rainy season; but if planted much later, and especially if rather late in the spring, the shoots, if left, would most certainly become stunted; and if cut back, in opposition to the general rule, that roots and tops should not be cut

back at one and the same time, there is every chance that most of them would become nothing but poor sickly scrubs with feeble shoots. So much is there of fact in this representation, that many gardeners, on going to a nursery, not only choose their plants, but themselves see that they are carefully taken up, and the roots surrounded with damp mulching. Unless they can do this, they make it a point to order maiden plants; these they can train and move carefully, at pleasure. The training, as well as the proper removing of trees from the ground, is a matter of as much importance to nurserymen as to their customers. If trees are taken up with more care, even although a little more is charged, and if planters can only make up their minds to plant at the commencement of the rainy season, or very soon after it, then the cutting-back process —which as now practiced is sometimes nearly down to the stump of the young trained trees, thus rendering all the training of no avail—will soon be numbered among the things of the past.

Some nurserymen, when fruit-trees are purchased rather early in the season, say in January, give instructions that Peaches, Plums, Cherries, and Apricots should be much cut back when planted; and that Apples and Pears bought at the same time, should stand over for that operation till the following spring. Now, I see no use in this excessive mutilation. I can see very well the benefit to nurserymen of cutting back in a moderate degree annually; but I do not see any service to the purchaser of well-trained nursery-trees, if they have abundance of roots when taken up, of cutting back at all. Is the benefit, if any, equivalent to the postponement of bearing for one or two years longer than necessary, and also the risk, in many cases, of ruining the trees? The advocacy of some cultivators of the cutting-back system, at least to any great extent, can not find any support, I think, in the HORTICULTURIST. If the moving is effected at the proper time, and in the right manner, I hold with no more cutting back than is required by the unripeness of the points of the shoots; and the necessity in some cases, perhaps, for getting more shoots to fill up large spaces in the young trees, and to give them good symmetrical forms. I see, in short, no benefit to be derived from such mutilation, and the shortening should only be resorted to when the shoots are not mature.

Training trees in a nursery to be lopped back when transferred to a garden or orchard-grounds, will probably go on until two practices are altered, and planters as well as nurserymen get freed from carelessness in this matter. Trees should be carefully planted soon after our first or second rains, about the beginning or middle of November, when the ground is warm enough, in our moderate climate, and when they have a long time before the dry season, in spring, to encourage and produce plenty of fresh rootlets. If the trees are taken up carefully, and carefully sent, they will suffer very little. And if a few green leaves remain, they will serve to keep up the circulation, while an occasional dash from the hose, syringe, or a watering-pot, and a slight shade in the hottest part of the day (although this latter suggestion will only apply in garden planting on a small scale), will prevent flagging and shriveling. The very lifting will induce a more perfect maturing of the wood; and before frosts or drouth can damage them, the plants will be able to hold their own. Such trees, with the soft points merely removed, will speedily lengthen and throw out healthy lateral shoots, and soon at-

tain a fair size. Even if the planter cuts back pretty freely, the vigorous state of the roots will soon produce a correlative vigor of branches. In fact, two-year old, or somewhat older trees, are a good deal in a similar position when judiciously and moderately pruned or cut back, to strong, healthy willow stools or Grape-vines, when pruned. None of these favorable characteristics, however, can exist in the case of trees imprudently taken up, and transferred in a bundle to their destination, in March or April, then put into the ground at the coldest season of the year as regards the soil, but with the increasing heat and dryness telling on them; chiefly when the buds are swelling and expanding into shoots, before there is healthy root action to supply their wants. Spring planters, consequently, unless they can use very extra care, have themselves, and not nurserymen to blame for many of the evils and disappointments that sometimes ensue in our favorable climate and soil.

Arrangements have been effected to establish a uniform time all over the country—that of the National Observatory, Washington, being taken as the standard. New York and the Observatory have been already united by telegraph, and this connection is, we are told, only the preliminary step toward the connection of all the principal cities in the East, the West, the South, and the distant Pacific Coast. The idea is that the chronometer time at the Observatory shall be telegraphed during the day to these different points, whence it will be again distributed among the lesser cities. Railroads, banks, and all the varied industries and enterprises, are expected to be governed by this uniform standard in the conduct and management of their business.

AN INDIAN WINE.

BY F. C. DANVERS.

The indigenous productions of India have recently received an addition in the shape of wine. Of all the numerous products and manufactures for which India has long enjoyed a far-famed popularity, she has never hitherto been known as a wine-producing country. This is no longer the case, and although it may be many years before we see Indian vintages advertised in and about London, there nevertheless exists the fact that she is capable of sending forth such productions. The fruit from which this wine is manufactured is of a dark, astringent, and sub-acid character. The tree on which it grows is the Jamun-tree (*Sygyznium Jambutanum*); and under the enterprising care of Mr. J. J. Varnier, an Italian gentleman, residing at Patna, it has been made to yield an indigenous wine, named by the manufacturer "Kenoines." It appears that some years ago, Mr. Varnier was struck with the resemblance which the berry of this tree bore to a kind of astringent grape which grows near Milazzo and Mascali, in Sicily, and which yields a generous, full-bodied, and, to Italians at least, a palatable wine. On analyzing the Jamun fruit, he found its approach to the grape in question greater than he had at first thought, and though, to a certain degree, deficient in vinous basis, yet capable of yielding good and palatable wine.

On his return from a visit to Sicily, Mr. Varnier tried experiments, and succeeded finally in inventing a process of producing wine out of the Jamun. Encouraged by the result, he secured in 1858 the aid of a skilled wine manufacturer from Sicily, and thereby had the satisfaction of turning out some wine with perfect success. Not only were

the defects of the wine corrected, but its keeping qualities in a hot climate are said to have been secured beyond doubt, and it is expected that age will refine and improve it more and more.

Dr. Collins, of the Government Opium Factory, at Patna, is of the opinion that it will prove a wholesome and palatable beverage; and Dr. Cameron, of Monghyr, described it as "pleasant to drink," and as a very light wine, of a light red color, of a sweet taste, bearing a great resemblance to claret-cup. A second wine, made apparently from the same fruit, is also described as a stronger wine, not so sweet nor so pleasant to drink, but containing a large quantity of astringent matter, which would doubtless prove useful for patients suffering from dysentery and diarrhœa.

THE KANGAROO VINE OF AUSTRALIA. — The habits of this giant climber (*Cissus antarctica*) are graphically described by a writer in the *Gardeners' Monthly*. He saw one of these vines which was almost seven hundred feet in length, and measured three feet and nine inches in girth at the base: It had first infolded in its deadly embrace a tree of considerable size, but this support had died and disappeared, and nothing remained but a spiral column of vine nearly two hundred feet in height, from the summit of which the huge climber sent out its continuations in a horizontal line for more than one hundred and thirty feet, until it reached a Eucalyptus tree. It was the opinion of our author's guide, that the trees which had supported it on its way to the Eucalyptus had perished by strangulation. He named the vine "the devil's corkscrew." Around the Eucalyptus the vine had wound in several coils, and then thrown out a number of stems, which were grasping all the trees in the neighborhood of its line of march.

PLANTS FOR HANGING BASKETS.

BY F. A. MILLER.

[Continued.]

In continuation of my communication in the October number of the CALIFORNIA HORTICULTURIST, on hanging baskets, I will now give a list of plants well adapted for such ornaments. As a centre piece for a basket the following are some of the best:

Chinese Primrose fills the basket well, keeps neat, and produces flowers in abundance—generally throughout the year. I would say, however, that the Primrose will not do well in the open air, and the basket containing it should have a place near the window or in the conservatory.

Sanchesia nobilis is a very suitable basket plant, with highly ornamental foliage, and will do very well for the house.

Centaurea candida is a very bright-looking plant for a basket, and will do very well where the basket is intended for out-of-doors, or on the veranda; for this purpose I do not know of anything better.

Dracoenas with variegated foliage are brilliant plants for baskets; however, they are higher in price and require to be inside of the house. In a warm place they will do well and produce a fine effect.

The *Alternantheras* are bright-looking plants, and are particularly well adapted for baskets; but it is necessary to keep the basket well drained, tolerably dry, and inside of the house, or else the leaves will drop. The same must be said of the

Coleus, which, of late, has become so popular with us as a basket plant; the bright colors help considerably in the sale of baskets. The habit of the *Coleus* is such, that it will soon outgrow

its neatness, and a removal of the plant becomes necessary.

Some of the dwarf-growing *Begonias* are very desirable for baskets, particularly the new variety, *foliosa*, or the well-known *Begonia parvifolia*—only for house culture.

The dwarf-growing *Fuchsia macrophylla* is a plant of good habit for an out-door basket; and will always flower well if kept moderately moist.

Ferns of various kinds are worthy objects for baskets, and if kept in a shaded place will look always bright, green, fresh, and graceful; a basket filled with Ferns should be kept rather moist.

For the window or the conservatory, the variegated ornamental foliage *Begonias* may be highly recommended. A basket of this kind must be kept rather dry, and in a warm and protected place. It makes a very effective ornament.

To fill a basket well, a number of smaller plants are required to be planted near the rim. The most hardy of these, for out-door baskets, are:

Isolepis gracilis, the best and most graceful grass for the purpose, always green if watered sufficiently.

Lobelia is next in importance to make up a good effect; it is of excellent habit, and gives a graceful appearance; its bright little blue flowers are always admired.

Senecio scandens (German Ivy) is the hardiest and most prolific plant for baskets; it climbs and trails in a pleasing manner, and grows well both in and out of doors.

Tradescantia zebrina, *Sedums* of various kinds, *Linaria*, *Maurandia*, *Saxifraga*, *Periwinkle* of different sorts, *Ivies*, green and variegated, and *Ivy-leaved Geraniums* are all hardy, and combined with the others named before, will make a most desirable basket for the open air.

For the greenhouse, conservatory, or parlor window, the following dwarfish-growing plants produce a most pleasing and brilliant effect:

Cissus discolor, excellent as a climber or trailer for a warm situation.

Antigonon leptopus is probably the most graceful trailing plant for such a basket. But few of them can be had as it is a plant of recent introduction.

Torenia Asiatica, a beautiful blue flowering greenhouse plant, which will do well under ordinary treatment, is well adapted for the purpose.

Fittonia gigantea, *Pearcei*, and *Verschaffeltii* are magnificent ornamental foliage plants for baskets.

The *Peperomias*, *Russelia juncea*, *Coccoloba*, *Gymnostachium*, *Variegated Sedum*, *Lycopodium*, *Smilax*, *Eranthemums*, *Ampelopsis Veitchii*, have all excellent habits for basket-growing in the house or under glass, and possess all the good qualities necessary to make up a most desirable collection.

After planting the basket with all that is to grow in it, it should be thoroughly watered and placed in the shade for a few days; during which time it should simply be left alone. As soon as all the plants have assumed a healthy and vigorous appearance, the basket may be hung in the place intended for it. During winter months, no more water should be given than is positively necessary. During summer, a frequent sprinkling of the basket is very beneficial.

[To be continued.]

To Freshen Cut Flowers.—Cut off half an inch of the stems and place them in boiling water, or otherwise place them in fresh water with fine powdered charcoal, and place a bell-glass over them.

SUMAC AND HOW IT IS CURED.

H. A. V. of Waco, Texas, writes:

There is a great quantity of Sumac on the prairies around here, and quantities of it might be easily gathered:

1. Will it pay to gather it?
2. Where is the best market for us?
3. What is the time to gather it?
4. How should it be prepared for market, and what price should it bring?

Several answers were elicited to inquiries about Sumac, from Southern readers of the *Country Gentleman*, in the course of last year, and we condense from them what comes the nearest to answering the questions of H. A. V., trusting that further information may be elicited from our correspondents who happen to be familiar with the product referred to.

So far as we are aware, more attention has been given to Sumac in the vicinity of Fredericksburg, Va., than in any other part of the country. A meeting was held at that place in September, 1872, of ten or a dozen firms engaged at various points in grinding Sumac, for consultation as to the interests of the business. It is stated that the price paid at the mills for dried Sumac is one to two cents per pound, and that after grinding, it is sold in New York at about four cents a pound by the ton. These facts lead us to infer that H. A. V.'s 1st question may be answered in the affirmative. As to the 2d question, we know of no market likely to be available short of St. Louis or New York. With reference to the other inquiries, we quote the following letter from a Western correspondent of the *Country Gentleman:*

Red Sumac—black, sometimes called—is the Sumac of our commerce. White is worthless. Here in southwest Missouri, the shrub grows without cultivation on all our prairies and glades. If it is to be cultivated, the better way, it seems, would be to get the ground in good fix, and plant in rows about three feet apart each way; cultivate the first year, and sow the land in Blue-grass, as it is of slow growth, and the turf will help the ground to hold moisture, and as the Sumac roots run near the surface, they will be nourished till the branches have afforded the necessary shelter. The leaves are gathered here from the middle of July to last of August, before they turn red, as after this they are not marketable. Dry or cure in the shade. Kiln drying has been practiced by some, but can not say as to the success, though it seems that this process would be practically useful. After curing, the leaflets are generally stripped from the stem and packed in bags or bales for market, though much was marketed the past season from some of our neighboring counties, stems and all. The price is from seventy-five cents to one dollar per hundred pounds stripped. The seeds are not gathered with the leaves.

A correspondent in western New York gave the following directions for curing:

The time for cutting is after the leaf is of full size, until it turns its color. Only the leaf is of value. No bobs must be allowed in it. Cut the stalks of the present year's growth, and cure them as you would hay, taking care to preserve it from rain and dew, as both injure it the same as hay would be injured. Put it in the barn, and examine it often for a time, for it will heat and spoil very soon if not properly cured. Let it lie until the weather is very cold; then thresh it. The best way is to put it on the barn floor; pile it on three or four feet deep, and put on a span of horses. They will soon tread the leaves from the stalk. Rake off the sticks and put on another flooring. When the leaves and small branches (that do not rake out) have become a foot or more deep on the floor, put the horses on to that, and tread and stir it until it is quite fine; then sift it, and it is ready for sacking. To sift it expeditiously will require a large coarse sieve. One of half an inch mesh, will take out most of the objectionable stems.

The following facts were quoted from a New York journal:

Previous to 1865 but little American Sumac was used; now nearly 4,000 tons are drawn from our old fields and forests, yet at the same time the consumption has largely increased, and the amount imported exceeds $300,000 in value. The upland Sumac is that preferred for market purposes. It is of three species: the stag-horn or *Rhus typhina*, which grows to a tree eighteen feet high, and the smooth or *Rhus glabra*. The *Rhus copallina* is also used; it is sometimes called dwarf Sumac. The swamp Sumac is not considered of value. The first has branches of a hairy appearance like a stag's horn; the two latter have little bristles or hairs on the berries. These Sumacs generally grow on red lands derived from primitive rocks.

The time to gather is before the berry is ripe. Gather only the leaves, and be careful to keep out the berries. Dry in the air, taking care to keep out rain and dew. Also do not have the leaves too thick, as they may heat; and it is also best to stir them several times a day. No woody stems should be allowed to be picked or get among the leaves. They add some weight, but take off a great deal from the value of the Sumac. When thoroughly dried it must be ground. This is done in mills, the stones of which run on edge, and there are numbers of them in Maryland, Virginia, and one at Greensboro', N. C. As dried, before being ground, it is worth about one and a half to two cents per pound, as may be its cleanliness. When ground and sent to New York, first-class American Sumac will sell from four and a half to five cents per pound by the ton.

When the business was first commenced, a great deal of poor Sumac was sent to New York. A bad name was given to the article, and the price was very low, but we are informed that our manufacturer in Winchester gets as much for his article as the best Sicilian. Southern Sumac is richer in tannin than the Sicilian, but there has not generally been enough care taken in its preparation for market. After grinding, it should be packed in bags containing 162 pounds. The bags, to hold this quantity, should be cut 40 by 60 inches. That considered best has a light green color.

There is room for a dozen or more of these mills in the South, and the Sumac for them is daily going to waste. The necessary machinery, buildings and power need not cost as much as $5,000, and if grinding only two hundred tons a year, would pay handsomely on that investment. The price at the mills in Virginia ranges from one to two cents per pound, and if properly prepared, will sell in New York at four cents per pound. There certainly must be a profit of $20 per ton.—*Country Gentleman.*

Plants for Hanging Baskets.—In filling the baskets, do not use common garden soil, as it is not suitable for growing plants in this way, from its tendency to bake together and shrink away from the sides of the basket or pot; but, if possible, procure some top-soil from the pine woods, which is rich with the decay of the tiny needles of the pines, or a yellow loamy soil, part sandy, from the florist's. Then be sure that there is a little hole in the bottom of the baskets to allow the superfluous water to pass away, or else put in bits of charcoal to act in drainage, and also to keep the soil sweet. A piece of sponge is also an excellent substitute for a hole in the basket, as it will suck up all superfluous moisture, and then allow the roots of the plants in their turn to receive it. Usually plants in hanging baskets require more moisture than other plants, because they are more thoroughly exposed on all sides to the air, and the water evaporates more quickly. So if they hang up away from direct contact with your eyes, you must give a little water both night and morning, so that they will not suffer for the want of it.

I am growing now for winter flowering and foliage, the ivy-leaved Geranium, *L'Elegante; Isolepis gracilis*, a

lovely grass of a light green; Coliseum Ivy; Smilax; *Peristrophe angustifolia aurea*, a lovely plant, with yellow leaves striped with green, while its flowers are of a delicate violet hue; *Pilea muscosa*, which resembles tree moss, and its graceful drooping habit makes it very desirable; and *Tradescantia zebrina*, whose striped leaves, of a rich purplish maroon and green, contrast charmingly with the other plants. These will fill three baskets, which will decorate my dining-room and parlor when the face of Nature is shrouded in its snowy mantle, and not a green thing is visible out of doors.—*Country Gentleman.*

OLD AVENUE OF OLIVES.

(SEE ILLUSTRATION.)

The patient plodding industry of the old Mission Fathers of California, from all accounts, gave them an abundant reward, and when we look over their mission-fields of labor now in ruins, and nearly all vestiges of a numerous Spanish and Indian population have disappeared, a feeling of sadness takes possession of our hearts. This is particularly the case when viewing these noble old Olives of a former day, and we can not do better than make a few extracts from the *Overland Monthly*, a magazine that is constantly publishing so many interesting facts about our prolific soil and genial climate: "I followed the guidance of my English friend, and was satisfied that he appreciated the beauty of the grounds. 'Stand here,' he said, taking position near the ancient olive-press, beneath the *allee* of equally ancient Olive-trees; 'look down that way, and fancy how in olden times the padre walked slowly along in the shadow of these Olives, breviary in hand, and looking up occasionally to see that the Indians did well their work in the garden.' I half-closed my eyes, and gave full scope to my imagination; the man was right. It was a picture serenely still, and full of heavenly peace.".

In connection with this subject we make the following extract from the same magazine: "Olive-culture, it is anticipated, will prove a lucrative business in the county of Santa Barbara, and elsewhere on the southern coast of California. The labor required in its cultivation, compared to that demanded by ordinary field and garden farming, is trifling. The tree at five years of age, returns a slight recompense for care; and at seven, an orchard should afford an average yield of about twenty gallons of berries to a tree. If there are seventy trees to an acre, there should be obtained from it 1,400 gallons of berries. From twenty gallons of berries may be extracted three gallons of oil; and, if properly manufactured, olive-oil will command $4 to $5 a gallon, at wholesale. Thus an average yield of Olives, derived from an orchard covering one acre of land, will produce about $800 worth of oil. After deducting the entire cost of production and manufacture, a net profit may be anticipated of at least $2 per gallon; and thus, one acre, containing seventy trees, yielding an average of twenty gallons of berries, or the equivalent of three gallons of oil each, will afford a surplus above all expenses of about $400 a year."

LANDS are made to increase yearly in fertility, mainly in three ways—by buying commercial fertilizers, by ploughing under clover, by buying rich food for animals and saving all their droppings. The farmer understands his business who knows which mode is best for him. The most successful farmers practice all three.—*Exchange.*

ORNAMENTAL AND FOREST TREES FOR FARMS.

There is much said in the agricultural papers of the day concerning the planting of ornamental and shade trees at the West. Various States have set apart "arbor days," when every man and boy shall feel it his duty to transplant one or more trees, and some States are so wise as to offer a reward to the person who shall set out the largest number of forest-trees on that day. Now, there is as great a scarcity of shade-trees upon many farms at the East as at the West, and the purpose of this article is to call attention to the fact, and persuade youthful farmers to supply the deficiency, and to transplant the Maple, Oak, Elm, and other trees this season, which will afford a grateful shade for years to come.

I heartily commend those farmers who plant new orchards of Apples, Pears, Cherries, Plums, and Peaches. The fruit is delicious, highly appreciated at home and abroad, and will bring in plenty of "material aid" in the shape of greenbacks. But fruit-trees are not desirable about the house, and can never take the place of forest-trees for adornment, timber, or fuel; nor are they as desirable for a "cool, umbrageous shade."

Cattle seek grateful shelter from the noonday sun, and it is as essential for their comfort to obtain it as it is for man's — as needful for their health. But do not plant the trees too close to your dwelling-houses and barns; give the air a free circulation about such buildings. Oaks, Maples, and Elms should not droop their branches over the roof-tops, but be planted at least thirty or forty feet distant.

In selecting trees to plant around the home farm, it is always well to choose those which are useful as well as ornamental. The Sugar Maples are quite as handsome as Oaks and Elms, while from thirty to forty good-sized trees, several pounds of delicious syrup can be obtained. I know a man who planted in his yard ten Sugar Maples, some twenty or thirty years ago, and now obtains about three gallons of maple syrup every spring. Thus we can combine utility and beauty. The American Weeping Elm is as perfect a tree as grows, and the Oak is always majestic, while the White and Black Ash and Silver Maple are also much admired.

While I am on this subject, let me beg your readers to plant trees outside of lawns and front yards, as well as within the fences, and have the pleasure of providing a shady highway and sidewalk for every passer-by. There is nothing which adds more beauty to a street than rows of forest-trees. Evergreens are most desirable for windbreaks, screens, and ornamental purposes upon a lawn, but are not so well adapted to the front door-yards. They are excellent shields from the north wind, however, and in single trees or in clusters, are especially beautiful on large lawns.

Almost all farmers can go into the forests and obtain as many trees as they require, merely for the cost of digging and transplanting them. If they choose Maples, Elms, Oaks, or Ash, they will be surer of success if they select those that are from eight to ten feet high; their top branches should be shortened, and many of them cut entirely away, leaving the stems nearly bare, but taking care to lift a large ball of earth and all the little rootlets possible.

In planting them, prepare a hole larger than the base of the tree, and deeper than the roots; pour one or two pails of water into the hole, and set the

tree in firmly and straight. Stamp down the soil around the roots closely, and then turn the uplifted sods bottom upward around the base of the tree.

To transplant Chestnut, Hickory, and White Oak, select small trees, not over five or six feet high, and leave the poles nearly bare of branches or leaves; also cut the main stem in for half a foot. This severe pruning has the effect of producing more root growth, and saves the life of many trees.

When new trees are planted, it is well to mulch them about the roots and stems with coarse stable litter or hay; and if planted where cattle will be liable to rub against them, a strong stake will afford much protection.—*Country Gentleman.*

Cultivation of Fish in Ditches and Ponds.—Experience proves that fish are much more easily cultivated than has been supposed. Much attention is now being paid in Germany to their cultivation in ponds and ditches, and it has been found, contrary to the generally received opinion in reference to such localities, that they are more favorable for the purposes than other large bodies of water, apparently fresh and pure in their character. This is doubtless owing to the great abundance of animal life, as well as the more decided concentration of vegetable substances in the form of living plants of different kinds, including the algæ. This produces a constitution of oxygen, needed for the respiration of the fish, and allows a larger mass of life to be crowded together in a given space. The reproduction of the species is unusually rapid, and the young grow very quickly. From the above it seems quite clear that there is no great mystery in fish culture, and that it can be made largely profitable, if properly managed.

PROLIFIC JOINT CORN.

BY ROBERT E. C. STEARNS.

Three seasons ago I noticed in the Illustrated Catalogue (1871) of B. K. Bliss & Sons, seedsmen, an advertisement of a new variety of Corn, which was highly recommended by them. Having known of the excellent reputation of the firm for many years, I sent to them for a few small packages of the seed, and gave it a trial. I should mention, however, that aside from their recommendation, I, by accident, met with an Indiana paper, and in glancing over it, I noticed that this Corn had taken two premiums for great yield, at two of the county fairs of that State.

My place of residence was at the time just outside the city limits of Petaluma, and on nearly the highest land thereabouts; the soil a gravelly loam, with some clay and some little fine sand intermingled; it had been in pasture for many years prior to planting; was plowed deep, and well broken up and pulverized; but the spring rains being exceedingly meagre, the soil was very dry in some places—"as dry as an ash-heap"—so dry that some of the seed never sprouted, and was dug up as hard and sound as when put in the ground. Of course the Corn that did grow was a long time in getting a start, yet under these exceedingly unfavorable influences, the crop was most abundant, and with a *fair show*, would have been enormous. I was more than satisfied, and fully believe that the yield would have reached, if not have exceeded, the statement of its originator. One stalk —from a single seed of course—which I exhibited at the Sonoma County Fair, had *fifteen* ears on it, and *ten* ears to a stalk was not uncommon, the ears being from five to seven inches long when

husked. It is a white Corn, with a small kernel and slender cob.

One secret of its great yield per acre is in the fact that it is not a *tall*-growing corn, and therefore admits of *close planting*, which will not answer for the common varieties. It can be planted in drills or furrows which are no farther than three feet apart, and a kernel dropped every *twelve* to *eighteen* inches; the latter distance being ample in ground that is in a good condition. At this spacing (three feet by eighteen inches) the number of stools per acre would be nearly nine thousand, which is nearly or quite three times as many as when or where the common Corn is planted.

It is a good parching Corn, though not the *very best* for this purpose; and as good for feed as any other, especially for poultry, as the kernels are small and do not need cracking.

For the purposes of fodder, cut green, to feed milch cows late in the season, it is first-rate, as the stalk or butt is slender and tender; and if the stalks are saved after harvest, the proportion of husks is so great as to make it superior. If sowed, to be cut green for fodder, I should put the seed not over *six* to *nine* inches apart in the row.

It is a heavy corn, weighing sixty to sixty-two pounds to the stricken bushel. I cultivated it as nearly on a level as possible, using a cultivator between the rows, and not a plow. It is by far the most prolific Corn that I ever saw; and unless a person is prejudiced against *white* corn, will prove as satisfactory as it has to me.

PERFUME OF THE AILANTHUS.—Many complaints have been made of the overpowering and offensive odor of the flowers of the Ailanthus-trees planted in the streets of Paris and other large cities. According to M. E. Andre, it is only the flowers of the male trees which exhale this unpleasant scent, and he recommends that none but female trees should be, for the future, planted in public or other places where the peculiar odor of the males might be offensive.

A BUNCH OF CALIFORNIA PEARS.

BY E. J. HOOPER.

In a window of the office of the *Bulletin*, in this city, are exhibited 140 Vicar of Winkfield Pears growing from a stem an inch only in diameter at the top or thickest part. The length of the stem and branches is four feet, and the width of the cluster, about the middle, is two and a half feet. Its weight is eighty-five pounds, and the pears will fill two common boxes containing nearly three bushels. The tree from which the fruit was taken is on the ranch of Mr. Kercheval, near Courtland, on the Sacramento River. This variety of Pear, sometimes called Vicar of Wakefield, Le Curé, Monsieur le Curé, and Clion, was found growing wild in a wood in France by M. Clion, a French curate; hence the names, Clion, Le Curé, etc. Afterward, it was grown in a garden at Winkfield, Berkshire, England, by Rev. Dr. Rham, and received the new name of Vicar of Winkfield, concentrating the two associations in the one name, and which, being of our own language, is to be preferred. It is a most profitable variety, either on the Quince stock or as a standard; and although only second quality, it is always fair and large. The tree is a very vigorous grower, with large, roundish, glossy leaves; shoots—diverging, and of a dark olive color; fruit—large, oblong, obovate, pyriform; color—dull pale-green at first, becoming pale-yellow, often with a fine

brownish-red cheek, marked sometimes with brown dots over the whole surface. Its season is from October to January. It is always a first-rate baking Pear, and when well ripened off in a warm temperature, it is fine as a table Pear, but generally rather astringent and crisp. It is always, however, remarkably fair and handsome, and noted for its productiveness and large size.

A VASE OF FLOWERS FOR THE SHAH.

On the occasion of the visit of this "attractive celebrity" to the Crystal Palace on the 30th of June, the private rooms appropriated to royalty were nicely decorated with flowering plants by Mr. Laing of the Stansted Nursery, Forest Hill, and with a number of vases, very tastefully arranged by a young lady of the neighborhood, well known among the amateur exhibitors at the Crystal Palace Flower Shows. Among them, that selected for the centre-table in the Shah's private room especially merits a record. The vase chosen was composed of four tall trumpets standing in a glass dish, the centre trumpet being taller than the other three which surrounded it, and curved away from it. In the dish were four fine blooms of crimson Cactus, alternately with large flowers of white Water Lily; these were set off with a few fronds of Maidenhair, judiciously placed. In each of the three curved trumpets was a flower of a fine white *Lilium* (in form and color intermediate between *L. auratum* and *L. candidum*), in which the deep yellow of the eye of the *Nymphœa* was sparingly repeated. Around each *Lilium* were a few blooms of blue Corn-flower, among which peeped out two little pieces of *Kalosanthes Coccinea*, of the same color as the Cactus below. The tallest trumpet was dressed with white *Rhodanthe*, mixed with two or three paler blue Corn-flowers and a little grass, and edged with small sprays of little crimson-tubed yellow-mouthed *Echeveria*. The stems were twined with climbing Fern (*Lygodium japonicum*), and between the three curved stems stood up three well-chosen pieces of white *Rhodanthe*. The whole formed one of the best specimens of floral arrangement I have ever seen, the flowers being of the best quality and in the best condition, and the grouping being faultless. I wish that decorators could be induced generally to use fewer colors in their vases, and to repeat the colors, instead of varying them, upon each tier of their vases. The most artistic decorations that have come under my observation have been produced either with flowers of the same colors that occur in the lowest tier being replaced by smaller and smaller flowers of the same color, in the succeeding upper tiers, or, if smaller flowers are not attainable, by paler shades in the upper tiers of the colors used below. This vase for the Shah's room presented illustrations of both these principles combined.—*The Garden.*

The Rotting of Fruit.—According to Decaisne, the rotting of fruit is produced by two microscopic fungi, which develop in moist air, viz.: *Mucor mucedo* and *Penecillium glaucum*, infinitely minute germs of which are continually floating in the atmosphere, and which attack more especially any injured or abraded portion of the surface. If the fruit be wrapped up in cotton or with soft tissue paper, or still better with wax paper or tin foil, the introduction of these germs will be prevented, and the fruit can be kept for a long time without any appreciable change.

Editorial Portfolio.

We regret to find that the Fall Exhibition of the Bay District Horticultural Society is financially a failure—a repetition of the ill-success of the spring. The utmost economy was used in the preparations; expenses were carefully reduced to a minimum; the officers and some of the members exerted themselves to the utmost, and performed those duties which in all other societies are deputed to employés; and to the honor of very many of the exhibitors, they have generously declined to draw the premiums awarded them—and yet a loss! The Secretary reports that his balance-sheet shows a deficiency of at least $500. We abstain from further comment at the present time, on account of the press of other matters; but at another time, will have to revert to the subject. We subjoin the report of the Secretary of the Society.

The Cinchona-tree.—In view of the probable introduction and cultivation of the Cinchona-tree upon American soil, any information relating to the proper treatment of these plants is rendered serviceable. A recent observer reports that, when the plants of the *Cinchona succirubra* are manured with sulphate of ammonia or guano, the result is an increase in the alkaloids obtained. By this treatment, however, a change seems to be effected by which this species loses its alkaloidal character with age, and for this reason manuring is not advised. A more favorable result follows the manuring of the *Cinchona officinalis*, which is thus caused to yield a much greater amount of quinine. While pursuing the same line of investigation, J. E. Howard reports that the leaves of the *Cinchona succirubra* contain no alkaloids.

FAIRS AND EXHIBITIONS.

Bay District Horticultural Society.—The Third Annual Exhibition of our Horticultural Society opened, as announced, on Tuesday, September 30th, at 8 o'clock, P. M., at the Horticultural Hall. Although the time for the necessary preparations was very limited, yet everything was so far completed that hardly any space was unoccupied at the time of opening.

In the absence of Dr. Kellogg, the President of the Society, Dr. Behr made a few appropriate remarks, and then introduced the speaker of the evening, Prof. E. S. Carr, who delivered an able address, which was published in the last number of the Horticulturist. That Professor Carr has rendered an excellent service to the cause of Horticulture by his talented speech, is acknowledged by all who heard him. It is particularly well appreciated by the members of the Society, who fully share his views as to the importance of the institution, and the lack of proper support on the part of the public.

After the close of Professor Carr's address, Dr. Behr declared the Exhibition open to the public; and under the influence of the delightful strains of the band, all present roamed around, full of admiration for the grand display made in so short a time, and enjoyed, to say the least, a most pleasant evening. Although the attendance at the opening was small in number, yet those present represented the very best class of our population.

The principal features of the Exhibition were flowers and plants, fruits, preserved fruits, and jellies.

Flowers, plants, shrubs, and trees were really well represented in point of variety, as well as quality. There was a very decided improvement in the

quality of plants, and nurserymen and florists did well in preparing their plants for exhibition, which they neglected to do at former exhibitions. The principal exhibitors in this department were E. L. Reimer, Miller & Sievers, E. Meyer, E. E. Moore, R. B. Woodward, William Robertson, and various amateurs.

The most interesting and most conspicuous collections were:

Group of *Tropical Plants*, of R. B. Woodward, by Th. Brown.

Tender Ornamental Foliage Plants—one collection by Th. Brown of Woodward's Gardens, another by Miller & Sievers, and a third by E. E. Moore.

Ferns, two very excellent collections, by E. Meyer and by Miller & Sievers.

Flowering Plants, by E. L. Reimer; a most meritorious exhibit for the lateness of the season.

Collection of *Caladiums*, by Miller & Sievers, including many new and fine varieties of late introduction.

Greenhouse and Conservatory Plants, three collections, by E. L. Reimer, Miller & Sievers, and E. Meyer, all of which were very meritorious.

New and Rare Plants, two collections.

Australian Evergreens, one collection.

Coniferæ, one very good group, by E. L. Reimer.

Coleus, two superior collections.

Hardy Ornamental Foliage Plants.

Best Grown Plants, twenty specimens, by E. L. Reimer; one of the best groups we ever had the pleasure of seeing.

Japanese Plants, a meritorious exhibit, by E. E. Moore.

Climbers, Roses, Fuchsias, Double Geraniums, Variegated-Leaf Geraniums, Ornamental Foliage Begonias, Marantas, Primulas, and California Native Plants, all well represented.

In Class II, some very good exhibits were made of Hanging Baskets, both rustic and wire, of Flower-stands, Fern-cases, and Coniferæ Cones.

In Class III, of Cut-flowers, the prominent features were Dahlias, Roses, and a general display of Cut-flowers.

Class IV, of Bouquets, was, as usual, inferior. But very few really good exhibits were made, our florists complaining of want of time. The deficiency in this class is always badly felt, and the want of enterprise in this department is not easily accounted for.

Class V, consisting of Fruits, was the most complete and remarkable that has ever been made in San Francisco. The principal exhibitors were D. C. Young, of Sonoma; John Rock, of San José; W. B. West, of Stockton; and Mrs. Odford, of Sacramento.

The collection of Apples, by D. C. Young, was the largest ever made in the State, comprising 140 varieties of superior quality. The same party also showed a complete collection of the Pears grown on this coast, and they were of excellent variety.

The exhibit of Foreign Grapes by Mr. W. B. West, notwithstanding the lateness of the season, was one of the best ever made, in point of varieties as well as quality.

Mr. Rock, of San José, had some very fine Apples, Prunes, and Quinces, which would be creditable to any country.

The display of Preserved Fruits, Jellies, and Pickles, by Mrs. Odford, of Sacramento, was the finest and most numerous ever made in this State, and found a great many admirers. We can not express too much praise for the untiring enterprise of this lady, who makes this industry a particular study.

Class VI, of California Wines, was represented by Mr. H. Winkle, who showed some excellent California White and Red Wines—Zinfandel, Gutedel,

and Cabinet—all of which are said to be of first quality.

EXHIBITS NOT INCLUDED IN THE GENERAL PREMIUM SCHEDULE.

By A. Kauffman, three Pears, *(Duchesse d'Angouleme)*, weighing, in the aggregate, four pounds and six ounces.

By Miss Stella Sheppard, one case of *Passiflora princeps*, in wax.

By P. A. Espina, specimens of Penmanship, representing various horticultural products.

By Andrea Sbarboro, three Japanese specimen plants, representing a cottage, a turtle, and a sailing vessel.

By Mrs. Burnum, one case of Skeleton Leaves.

By E. Wolleb, four specimens of Ornamental Foliage Plants.

By various children, plants which they had received from the Society at former exhibitions, and which, to their credit be it said, showed a marked improvement as compared with those of the last exhibition.

AWARDS OF PREMIUMS.

Class I.—Plants.

1. Flowering Plants in Bloom: first prize, E. L. Reimer.
2. Australian Evergreens: first prize, E. L. Reimer.
3. Coniferæ: first prize, E. L. Reimer.
4. Plants for Greenhouse and Conservatory: first prize, Miller & Sievers; second prize, E. Meyer; third prize, E. L. Reimer.
5. Hardy Ornamental Foliage Plants: first prize, E. L. Reimer.
6. Tender Ornamental Foliage Plants: first prize, Th. Brown, Woodward's Gardens; second prize, Miller & Sievers; third prize, E. E. Moore.
7. Tropical Plants: first prize, Th. Brown, Woodward's Gardens. Special mention of superior specimens.
8. Hardy Climbers: first prize, E. L. Reimer.
9. Tender Climbers, second prize, Miller & Sievers.
10. New and Rare Plants: first prize, Miller and Sievers; second prize, E. Meyer.
11. Plants for Hanging Baskets and Rocks; second prize, E. L. Reimer.
12. Ferns: first prize, E. Meyer; second prize, Miller & Sievers.
14. Coleus: first prize, E. L. Reimer; second prize, Miller & Sievers.
15. Fuchsias: first prize, E. L. Reimer; second prize, Miller & Sievers.
16. Double Geranium: second prize, E. L. Reimer.
17. Variegated Leaf Geraniums: first prize, E. L. Reimer.
18. Zonale Geraniums: second prize, E. L. Reimer.
20. Ornamental Foliage Begonias: first prize, E. E. Moore.
24. Caladiums: first prize, Miller & Sievers.
25. Marantas: first prize, Miller & Sievers.
27. Primulas: first prize, Miller & Sievers.
30. California Native Plants: first prize, Miller & Sievers.
31. Japanese Plants: first prize, E. E. Moore.
32. Best-grown Plants, twenty specimens: first prize, E. L. Reimer.
33. Best-grown Plants, ten specimens: first prize, Miller & Sievers.

Judges—R. Michelsen, Dr. Behr, and W. B. West.

Class II.—Miscellaneous.

34. Rustic Hanging Baskets: first prize, E. E. Moore.
35. Wire Hanging Baskets: first prize, E. L. Reimer; second prize, Mrs. Hoffman.
36. Rustic Flower-stand: first prize, Miller & Sievers.
37. Wire Flower-stand: first prize, Miller & Sievers; second prize, Mrs. Hoffman.
38. Coniferæ Cones of California: first prize, C. Stephens.
41. Square Fern-case: first prize, M. H. Lester.
42. Round Fern-case: first prize, Miller & Sievers.

Judges—D. C. Young, Dr. Behr, and W. B. West.

Class III.—Cut Flowers.

43. Cut Flowers, general display: first

prize, E. L. Reimer; second prize, Wm. Robertson.

44. Gladiolus: first prize, Miller & Sievers.

45. Cut Roses: first prize, Wm. Robertson; second prize, Miller & Sievers.

46. Cut Pinks: first prize, Miller & Sievers.

47. Cut Dahlias: first prize, N. M. Malmgren; second prize, Miller & Sievers.

Class IV.—Bouquets.

48. Basket of Flowers: first prize, Miller & Sievers, by August Duhem.

49. Pyramid Bouquet: first prize, E. L. Reimer.

50. Wedding Bouquet: first prize, W. Robertson.

51. Funeral Wreath: first prize, W. Robertson.

52. Funeral Cross: first prize, W. Robertson.

53. Funeral Cross: diploma, Miller & Sievers, by Hugo Leopold.

54. Flat Bouquet: first prize, E. L. Reimer.

55. Floral Design: first prize and diploma, Miller & Sievers, by August Duhem.

Judges—Th. Brown, H. Horst, and R. Michelsen.

Class V.—Fruits.

1. Best collection of Fruits: first prize and diploma, D. C. Young, of Sonoma.

2. Best collection of Apples: first prize, D. C. Young.

3. Best twelve varieties of Apples: first prize, D. C. Young.

4. Best collection of Pears: first prize, D. C. Young.

5. Best twelve varieties of Pears: first prize, D. C. Young.

6. Best collection of Peaches: first prize, D. C. Young.

11. Best collection of Prunes: first prize, John Rock, of San José.

12. Best collection of Quinces: first prize, D. C. Young.

13. Best collection of Figs: first prize, D. C. Young.

14. Best collection Foreign Grapes: first prize and diploma, W. B. West, of Stockton.

15. Best twelve sorts of Wine Grapes: first prize, D. C. Young.

16. Best twelve sorts of Table Grapes: first prize, D. C. Young.

20. Best exhibit of Preserved Fruits: first prize and diploma, Mrs. J. M. Odford, of Sacramento.

Meritorious exhibit of Branches of Fruits; D. C. Young, of Sonoma, and C. W. Stevens, Fruit Vale.

Honorable mention of Quince Seedlings: D. C. Young, of Sonoma.

Judges—C. Westphal, Wm. Robertson, and E. L. Reimer.

The Society may well be proud of their success in making up the Exhibition, which was in every respect superior to any of their former atttempts. Unfortunately, however, the show resulted again in a financial failure, and the actual loss may be estimated at about five hundred dollars, which, in addition to the loss of last spring, will cripple the Society for some time; and the serious question arises, whether the people of San Francisco can be depended upon in the future to sustain the efforts of the Society in fostering a taste for the beautiful. We have a sufficient population to make a Horticultural Society a permanent institution, and it is time that the people should awaken to their own interests. If they fail to do this, they certainly must do without this kind of exhibitions hereafter. It is to be hoped that the Society will not be compelled to discontinue such worthy displays.

No greater injury has ever been done in horticulture than the recommendation by inexperienced writers of *chip manure*, as a dressing. Its danger arises mainly from its ready disposition to spread fungi, which inevitably arise in soils naturally a little moist and tenacious. When once formed, such fungi spread with astonishing rapidity, totally preventing growth, and finally killing the plants. —*Horticulturist.*

WOODWARD'S GARDENS.

The present season of the year is not a very favorable one for luxuriating among flowers and plants. Nevertheless, a recent inspection of the conservatories and tropical houses of this establishment afforded us ample satisfaction. And we have been pleased to see, on several recent occasions, that instructors of the young have availed themselves of the very liberal opportunity afforded by the large-souled proprietor, to study natural philosophy from *objects;* exemplified, as it is, in so many of its departments in these really rich grounds. This is as it should be; it is the best, the surest, the pleasantest, and the most rapid way, both for pupils and teachers, for imparting instruction. We speak from many years practical experience in education. School-books are but text-books, and no class should graduate without passing through such a course.

Among the many choice plants which attracted our attention in the tropical houses, we will mention the following as deserving particular notice: *Pandanus Javaniensis; Scudleria moxciana; Cypripedium insigne;* and *C. venustem variegatum* (parasites in bloom); *Hemerocallis fulva*, variegated Lily; *Croton carcascaria, C. pictum, C. rubra variegata; Cycas revoluta; Eranthemum scandens; Micania spectosa; Dioscora discolor; Euphorbia sanguinea; Alocassia Bataviensis*, a kindred species to Tara; *Maranta Zebrina; Phlelobium aureum; Strelitzia reginæ*, Queen Lily (2), both coming into bloom; *Amaranthus salicifolius; Anthurium regale; Gesneria refulgens, G. cinnabarina, G. zebrina; Ceropegia elegans; Phelia mimosa*, bombarding Fern; *Aphelandra cristata; Tarinia Asiatica; Begonia Weltoniensia, B. semperflorens;* while of the Rex variety of *Begonias* there were *B. Queen of Hanover, B. silver chain, B. Marchali.* But we must stop or we shall become tedious. Our friends must see and admire for themselves.

FAVORS RECEIVED.

We are indebted to the courtesy of the Hon. Frederick Watts, Commissioner of Agriculture, Washington, D. C., for the *Annual Report of the Department of Agriculture* for 1872. This is always most acceptable for the carefully prepared statistics and valuable information of this most important department. Also for the monthly reports so regularly forwarded.

The Overland Monthly for November. Again we welcome our always pleasantly anticipated contemporary—another very interesting number. "The Gravel Ranges of the Gold Belt" is an important article; "Seeking the Golden Fleece—No. 3" is highly interesting; and "Mount Whitney" very readable. "Etc." and "Current Literature quite up to average.

MANURE AND WATER.—The Rose is one of the few cultivated plants that will profit by almost any amount of stimulating manure, provided it is not too fresh and rank. Let it be old and fine, and then apply as liberally as the supply will warrant. All Roses do better in rather heavy and compact soil than in one that is very light, containing too much sand or vegetable matter. The Rose being a thirsty plant, it should be planted in a deep, moist soil, or where water can be freely given artificially. Those who plant single specimens of Roses in sod or upon raised mounds in the garden, usually learn their mistake in July or August.

NEW AND RARE PLANTS.

Mimulus cupreus, variety "Brilliant."—There are few things more gay in the spring of the year than the various varieties of "monkey flower." They are, besides, of very easy culture, if a few simple precautions are taken. The chief of these is to keep them from great heat. They like rich soil, and to be in the full light; and like moisture, but not to be soddened or wet. A saucer with water under the pot, is an excellent way to keep up this regular supply. There are many cool places about buildings and in greenhouses, just suited to it. In every other respect it is easy of culture. The variety treated of is said to be a *scarlet*, which, if so, will render it peculiarly desirable.

—*Gardener's Monthly.*

Yucca Baccata.—This new and very distinct species, found in New Mexico, Utah, and Arizona, was introduced into cultivation in Europe last year by M. Linden, of Brussels. In the rigidity of its habit and the texture of its leaves, it bears a greater resemblance to *Y. cornuta* or *Y. Treculeana* than to any species of the *aloifolia* section. It has a thick, wrinkled stem, about a foot high, on the summit of which are closely crowded the short, straight, erect, pointed, boat-shaped leaves of a light green color, bearing on their margins numerous long, broadish, and sharply pointed shaving-like appendages. The fruit is a capsule, as in all the Yuccas, but has the shape and fleshy consistency of a ripe Banana, by which name it is known to the natives of Western America. The taste is sweet and agreeable, and the Indians, who are very fond of it, gather and dry large quantities for winter use. The uncooked fruit is said to possess highly cathartic properties.—*Garden.*

Aquilegia leptocera aurea.—This is a new introduction from the Rocky Mountains. It is closely related to *A. canadensis*, and in habit of growth, foliage, and height resembles that species. The flowers are, however, pale straw-colored; and being a free-flowering plant, it will form a very desirable contrast to the blues and reds of the other species and varieties. It appears to be as easily cultivated as any of its congeners, and quite as hardy. The *Garden* says of a specimen recently exhibited in London: "That fine yellow Columbine (*Aquilegia aurea*) shown at Kensington the other day, is a distinct and handsome plant, with fine clear yellow flowers, making it worthy of association with the very finest species of Columbine."—*Gardener's Monthly.*

Saxifraga Peltata.—One of the most extraordinary and distinct of its family. It produces large lobed leaves eight inches across, attached near the centre to strong stalks eighteen inches or two feet long, and bearing striking resemblance to an umbrella, in consequence of which it is popularly called the Umbrella plant. The flower-stalks rise to the height of two feet, bearing cymes of large, white, rose-tinted flowers. It forms strong, fleshy creeping stems, and is found growing on the margins of streams in California, with the stems frequently submerged. This at once suggests its fitness for ornamenting the banks of streams and lakes in this country.—*Gardener's Monthly.*

Tea, as grown in the south, is said to lack the indispensible *theine* for which it is alone valuable—that it does not, when steeped, yield the flavor or fragrance of the Chinese production. Is this true? Can any of our Southern readers send us a sample of American-grown tea?—*Rural New-Yorker.*

NEW FRUITS AND VEGETABLES.

The Finest Fruit in the World.—The Durian, a fruit about which very little is known in England, but which is reckoned by natives and Europeans in the Malay Archipelago to be the finest fruit in the world, grows in great abundance in Java and Borneo. It grows on a large and lofty forest tree, somewhat resembling an Elm in its general character, but with a more smooth and scaly bark. The fruit is round or slightly oval, about the size of a large Cocoanut, of a green color, and covered all over with short, stout spines, the bases of which touch each other, and are consequently somewhat hexagonal, while the points are very strong and sharp. It is so completely armed, that if the stalk is broken off it is a difficult matter to lift one from the ground. The outer rind is so thick and tough, that from whatever height it may fall it is never broken. From the base to the apex five very faint lines may be traced, over which the spines arch a little; these are the sutures of the carpels, and show where the fruit may be divided with a heavy knife and a strong hand. The five cells are satiny white within, and are each filled with an oval mass of cream-colored pulp, imbedded in which are two or three seeds about the size of Chestnuts. This pulp is the eatable part, and its consistency and flavor are indescribable. A rich butter-like custard highly flavored with almond gives the best general idea of it, but intermingled with it come wafts of flavor that call to mind cream-cheese, onion-sauce, brown-sherry, and other incongruities. Then there is a rich glutinous smoothness in the pulp which nothing else possesses, but which adds to its delicacy. It is neither acid, nor sweet, nor juicy, yet one feels the want of none of these qualities, for it is perfect as it is. It produces no nausea or other bad effect, and the more you eat of it the less you feel inclined to stop. In fact, to eat Durians is a new sensation, worth a voyage to the East to experience.—*Garden.*

An Early Pea.—The "Philadelphia" is the name of a fine variety of the Pea, a sample of which has been left at our office by E. Rishel, Esq., of this county. Mr. Rishel says this Pea is very early, and will shell out in five weeks from planting.—*Central Union Agriculturist.*

Seedling Raspberry from Mr. Price.—This is a dark variety—same color as Philadelphia, but belongs to the Antwerp stock. The fruit is medium size, of good flavor, and evidently produced in great abundance. Its positive value will depend on comparison while growing together with other kinds.—*Gardener's Monthly.*

Garrya Elliptica.—This forms a fine hardy evergreen bush, which grows from six to ten feet high, and has a rather dense and spreading head, furnished with numerous slender shoots, which are downy when young, but quite smooth when fully matured. It is a native of North-west America and California, and was first introduced into England in 1828. It is easily increased either by layers or by means of cuttings of the half-ripened shoots, and grows freely in any good garden soil. The leaves are opposite, somewhat oblong or elliptic, with a small acute point, rather wavy when young, thick and leathery in texture, set on short footstalks, persistent, of a dark shining green above and hoary beneath. The flowers, which are unisexual and on distinct plants, are arranged in pendulous catkin-like racemes with connate bracts, and are produced

from December to March. The male flowers form very long, slender pendulous catkins, from six to ten inches in length, and are of a greenish-white or yellowish color, while the female ones are produced in short green catkins not more than three or four inches in length, and are very deficient in graceful appearance compared with that of the male ones. The fruit, which is produced in compact bunches, is a berried pericarp containing two hard bony seeds, as large as a moderate-sized black currant, and of nearly the same color.

BEGONIA.—This foliage plant is a very desirable one for the conservatory, the silver markings, distinctly formed, render it an object of great beauty. The hybrids of this plant now being produced, are gorgeous in the extreme.

Imperialis—Very pale green leaves, suffused with rosy crimson, shaded red.

Vittata—Blotched silvery white; leaves pointed.

Sanguinea—Leaves deep glassy green; under side of a deep blood red.

Rex—Leaves very large, purplish green, with a changeable metallic lustre, with a broad silvery zone around the leaf midway from the centre; under side purple.

Madam Wagner—Leaves silvery green, spotted, with very dark edge and centre.

Urania—Nearly black green shiny leaves, all edged with crimson.

Punctata—Dark green leaves distinctly spotted.

Maincata—Very large leaves, light green, bordered with crimson; dotted under side, with crimson spikes.

Argentea—Silvery green leaves, tinged purple.

Nebulosa—Silvery green, with plainly marked dark margin.

Maculata Ricinifolia—Very large leaves, artistically cut and very curiously marked.

The Begonias do not succeed well out-doors; at least, if bedded out, should have a shaded border. They require plenty of moisture and warmth, with a soil formed of peaty mould and sand. To those who have not had much experience in growing house-plants, we would advise them not to attempt the Begonia only upon a limited scale: to the conservatory they are indispensable.—*Ex.*

WORK FOR THE MONTH.

BY F. A. MILLER.

Although we had a heavy rain at the beginning of October, which moistened the ground several inches deep, the strong winds which followed absorbed all the moisture, and we are once again in the dry season; however, an early winter is anticipated, and if indications prove true, we will have more rain early in November. This should put us in mind of some work which ought to be done before the wet weather commences. Seeds of various kinds of plants are now ripe and should be gathered; this should be done in the afternoon of a pleasant day, as the seeds are damp in the morning. As soon as sufficiently dry, clean them and put them away in a dry, cool place, after marking carefully each kind. This will relieve you of purchasing the same kinds of seeds, and you have the advantage of knowing that they are fresh.

Some Pansy and Mignonette, Candytuft and Sweet Alyssum seed should be preserved for winter use; they flower well with us in winter.

The Gladiolus bulbs which have flowered during summer, should be taken up now; expose them to the atmosphere

for a few days to dry them sufficiently, then put them away in boxes, and in some dry place until spring.

Dahlias should be cut down to within six inches of the ground, and in a week or two after they should be taken up and treated in the same manner as Gladiolus. It is always well to mark them before cutting them down, so that the colors may be known when planting time comes.

I will call attention again to the planting of all kinds of Dutch bulbs, such as Hyacinths, Tulips, Narcissus, Crocus, Anemones, Ranunculus, Lily of the Valley, Crown Imperials; particularly those which are intended for home-culture. Do not plant them all at once, but keep a few on hand for later planting, so that some flowers may be had after the first lot has done blooming. Hyacinths, Narcissus, and Lily of the Valley, are particularly well adapted for home-culture, as they are easily taken care of. If planted in pots or in glasses, they should be set in a dark room for two weeks, where they will make roots and produce better stalks, which will at first appear rather yellow, but will soon assume a healthy green color, after being placed in the light for a day or two. The best soil for Hyacinths is one-third loam, one-third sand, and one-third of old rotten manure. Always see that the soil is well drained by putting several pieces of broken pots over the hole in the bottom of the pot. Plant the bulbs so that the tops may just be seen on the surface, and settle the soil firmly all around the bulb. For the cultivation of the Lily of the Valley, I would refer the reader to page 261 of the present volume of the HORTICULTURIST.

Camellias may now be kept tolerably moist, and should have a syringing overhead two or three times a week. It will also be very beneficial to carefully wash the foliage with a soft sponge. Not more than two buds should be left in a cluster, if good and perfect flowers are desired. They must also be kept screened from the sun.

Azaleas are forming their flower-buds, and a little more water may be given. From my own experience, I would advise to syringe them frequently overhead. It is most important that Azaleas should have good drainage, and a little coarse charcoal at the bottom of the pots is of very good service, keeping the soil sweet, etc.

The present month is the best time to make Rose cuttings for planting in frames as well as in the open ground. If to be grown under glass, the cuttings should not be longer than two to three inches, and should be planted in pure sand; if intended for the open ground, make your cuttings four to six inches long of strong wood, and plant them in deep sandy loam well worked up.

To be successful with Rose cuttings under glass, a little bottom heat should be made up of fresh manure and tan, in which the boxes filled with cuttings as above stated, should be plunged after a thorough watering. The glass must not be lifted until the cuttings have made roots; and the most important point is, that they should never be watered until they are well rooted. Moisture is easily kept up by keeping the frame close, as no evaporation can then take place.

HOTEIA (SPIRÆA) JAPONICA.—This, although hardy, is an excellent plant for forcing. Its lively green foliage and charming white flowers make it extremely useful in all kinds of ways, and the demand for bouquet work, as well as for furnishing purposes, is very great. It is easily grown, and no establishment should be without it.—*The Garden.*

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

The cultivation of the Grape is now of course one of the most important and valuable interests in California. It is somewhat interesting to observe from history, at what an early period, in England, the Grape vine was cultivated for wine and other purposes. The vale of Gloucester, according to William of Malmesbury, in the twelfth century, was planted very thick with vineyards, and they produced Grapes in the greatest abundance, and of the sweetest taste. The wine made there had no disagreeable tartness, and was said to have been very little inferior to the wines of France. In Normandy, there was a vineyard from which wine was made as early as 1561. In 1550 there was no English wine, the climate probably, even in the warmest locations, being too cold. But in 1781, Lord Teynham, in a very warm aspect, had such quantities of Grapes in Kent, that some years they made two or three tuns of white wine, little, if any inferior to Lisbon. In general history the making of wine is recorded in the very earliest history of nations. In the United States, wine making is comparatively of a recent date. The Swiss planted in the West the first vineyard, at Vevay, Indiana, on the Ohio River. They manufactured a wine similar to the "Cape wine" made at the Dutch colonies, at the Cape of Good Hope.

About the year 1829, Nicholas Longworth, of Cincinnati, planted the first cuttings of the Catawba and Isabella grapes, in his garden there, which had been discovered growing on the river Catawba, in North Carolina. His tenants, most of them Germans, soon planted large vineyards of these vines, and made a good, but somewhat acid wine, which suited their tastes, and also, after they got used to it, of many Americans. Mr. Longworth is justly entitled to the name of the father of Grape culture in the West. During his time and since, many valuable seedlings from the Catawba and Isabella, and others, have been raised, the most popular of which, for a red wine, is Ives' Seedling. Grape-growing has extended to Missouri and other States, and to the islands of Lake Erie, and the lake shore. New varieties are still being introduced in the States east of us, which are freer from disease than those originally planted. However the profit of growing Grapes for wine in the Eastern States may be questioned, there can be no doubt of its success in this State. There is a fair foreign, as well as domestic demand for our Grapes and wine.

We say, then, to all, plant more Grapes. There is no more healthful, life-giving, delicious fruit. Every farmer and country resident should plant them for his family. Every man who has a garden or patch of ground should cultivate a few vines. There is no mystery about Grape-growing; a man who can grow corn, can grow Grapes, and one who can make cider can make wine. This country is not only a large consumer of fruit, but it is becoming rapidly one of the largest wine-consuming countries in the world. In California, at any rate, we can produce wine at a price low enough to be within the reach of the people, and probably thereby promote temperance, and this can easily be continued, and still be one of the most remunerative crops the husbandman can raise. But we must be wise. The wool-grower of to-day does not raise the common and coarse wool-producing sheep that he did twenty years ago.

Why? Because improved breeds have been introduced, yielding a wool of finer texture, and commanding a higher price. So the Grape-grower must yield his prejudices, give up some of the old sorts, and plant such as command the popular taste. Our climate is favorable for every known variety of any value. Our soil is new and fertile, and our Grapes are rich, even if anything too rich, in saccharine material, and produce wine of finest quality without anything added. Remember that in wine-growing we are yet in our infancy. We have a character to make, which is of more importance to us than dollars and cents at present. We must stick to the pure juice of the Grape. We say to all, plant Grapes; for what is more delicious in the heat of the day in summer, than to sit under your own vine, and in the cool of autumn to eat of the fruit thereof?

Quinces have now been marketed for some time, and bring such prices per bushel as pay the growers very well. We observe that numbers of boxes have been sent by railroad to New York, and have proved profitable to the owner. The Apple Quince is the best variety, and can be grown on any good land that will grow well other varieties of fruit; but, like the Pear, we think a location where the soil is not subject to extremes of dryness or moisture, is much the best. Where a choice must be taken of either of these extremes, moisture or proper irrigation is best suited for the Quince. Bushes should be planted ten or twelve feet apart, and cultivated annually, as other orchards. If well done, they will be, on this climatic forcing slope, in good bearing in three or four years from the time of planting out.

While on the subject of the general cultivation of fruit, I will here state that our most highly esteemed and eminent Pomologist, Marshall P. Wilder, President of the U. S. Pomological Society, in his address at Boston, in September last, among other excellent information and advice, after naming the wonders which had been effected within forty years in the United States in fruit raising, observed:

"These considerations should excite us to greater enterprise and renewed exertions. * * * We have but just entered upon it. How vast and inviting the field that lies spread out before us! * * * Were I never to address you again, I would repeat the counsel I have so often given, in regard to the production of new and fine fruits [let us apply this to California], viz.: *To plant the most mature and perfect seeds, of the most hardy, vigorous, and valuable varieties; and, as a shorter process, ensuring more certain and happy results, cross or hybridize your best fruits.*" Mr. Wilder, speaking of the golden fruits of California, said they were "more precious than her golden sands;" and he wound up his admirable address by saying, "And as our members, from time to time, shall assemble to gather in the fruit of their researches, may they have reason to rejoice more and more in the benefactions which it bestows on mankind; and when at last we shall be called to relinquish the cultivation of our orchards, gardens, and vineyards on earth, may we permitted to participate in the cultivation of

> 'That tree which bears immortal fruit,
> Without canker at the root;
> Its healing leaves to us be given,
> Its bloom on earth, its fruit in Heaven!'"

In our markets, for more than six weeks, Strawberries have been quite abundant and of good quality. The first rain we had this fall helped the vines in their bearing, independently

of what irrigation they had. The fruit was of good size from the first, and still continues so to be. They have sold from 15 to 20 cts. per pound.

Bartlett Pears were nearly out by the middle of last month. The Winter Nelis is now beginning to be in fine eating order, with the Glout Morceau, and one or two more winter sorts.

There was no material change in the fruit market October 24th. A few varieties of fruit are noticeable as being absent. Plums are among the number. The supply of Grapes showed no signs, then, of diminution, and prices continued low. Beautiful Black Moroccos were retailing, about that time, at 12½ cts. per pound. The range of all kinds was from 8 to 15 cts. per pound. Strawberries were in fair demand at 15 to 20 cts. per pound. Oranges were, at the last of October, virtually out of the market; and the prices of what few were to be found at one or two of the stalls were $1.50 and upwards. A few Peaches, only fit for cooking, were offered for 6 cts. per pound, at the beginning of the present month (November). A further consignment of Bartlett Pears were received from Pleasant Valley, about the above date. The fruit was small, but found a ready sale at 15 cts. per pound.

About the 25th of October, we had several frosty nights, of a severity, for us, thus early, quite rare at this season of the year. These frosts have somewhat curtailed the supply of several kinds of vegetables. We have had several fine lots of new Green Peas from Half Moon Bay and other places, which have been received with appreciation. These and String Beans have been a shade higher in price. Asparagus, in limited quantities, has come forward from the Mission gardens, and has sold at 50 cts. In addition to the above list, we quote Salsify, 8@10 cts. per bunch; Lettuce, 25 cts. per dozen; Mint, 10 cts. per bunch; Pickles, 50@75 cts. per gallon; Potatoes, by the sack, delivered, $1.50@1.75 per 100 pounds.

The supply of Strawberries was light the last of October, and prices were correspondingly high. More Bartlett Pears arrived about the same time from Pleasant Valley, Solano County, retailing at 15 cts. per pound. Plums and Peaches will soon disappear. Grapes are still plentiful (1st November). Some Lemons are still coming by each steamer from Los Angeles, but more liberal quantities and much better fruit comes from the Mediterranean.

Mr. S. B. Higgins, author of the work on *Ophidians*, transmits by mail some notes on the action of rattlesnake poison, by which it appears that the poison first affects the plasma, then the nerve-centre, communicating to the former a distinctly acid condition. It defibrinates it; renders it thus permanently diffluent, that is, incapable of coagulating, and this acid condition reacting upon the corpuscles, almost immediately affects their color by attacking the hematosis, and separating it from the other component elements. The sensory nerves are first affected, then the motor nerves; but the latter appear to be most especially influenced, and in quite a different way from what they are by the cobra poison. The fatal result is quicker in the former than in the latter case, but none less surely (though sometimes it is many hours after the wound) death ensues. Days may elapse before the bitten person dies, as in case of bites by a hydrophis, a marine type of the snake. Cases of a hydrophis bite are known to have occurred where the bitten person has recovered.

Editorial Gleanings.

Now that the construction of an aquarium at Central Park is being urged, and our readers are becoming familiar with the great interest and value of such an institution, it is with pleasure that we are able to present the following description of the Aquarium at Woodward's Gardens, San Francisco. At present this work is not only the largest, but the only public aquarium of any size this side of the Atlantic; and, from a recent conversation with Mr. Woodward, we learn that no means is to be spared to make it equal to the greatest. At an early day we hope to present an illustrated description of this aquarium, with its surroundings; in the mean time, the following from the *Weekly Alta* will serve to convey an idea as to its size and general form: "The aquarium building is situated between the seal-pond and the entrance from the garden to the amphitheatre. The arrangement for the tanks beneath is very simple. They are sixteen in number, raised on each side so that one side of each tank is on a level with a man's shoulder. A person passing through this lower apartment sees on each side of him, as it were, sections of the sea containing marine life. The side of the tank toward him is glass; the water is open to the sunlight above, and no light can reach the passage-way, except by first passing through the water in the tanks and the glass fronts. The tanks are made of Frear stone. The water for the marine fish is brought from the deep sea, near the Farallones, where it is found clear as crystal. It is kept constantly in motion, and aërated by the falling of a stream."

In the interview with Mr. Woodward, to which we have referred, that gentleman informed us that, though his aquarium was yet in its infancy, and in many particulars not what he designs that it shall be, yet it is to the people the most attractive feature of his gardens, successfully rivaling in interest the Zoological and Botanical Gardens, the Art Gallery, and many other attractions. Mr. Woodward expressed himself full of sympathy with our movement for the establishment of a similar institution at Central Park, and assured us that we could not overrate its importance, or present its claims in too strong language. —*Appleton's Journal.*

A Yew Flowering in Winter.—About six weeks ago I nipped a small spray off a dwarf yew-tree, protruding through the snow, in my neighbor's garden. It was my intention to press it; but for immediate convenience it was put in a glass of water, in the sitting-room, and for some time no more was thought about it. A few days ago (Feb. 7), I was astonished to find a number of full blown flowers on the spray. These pretty, diminutive objects were accompanied with an interesting phenomenon. The anthers kept up a little fusillade of explosions, throwing off the yellow pollen in tiny clouds. My thumb-nail, which happened to be near one of the little globular catkins about the size of a canary's eye, was quite yellow with the ejected powder. I shook off some on the side of a microscope. They were, in form, when under a lens of high power, like angular pebbles, and although I had barely touched the slide with my nail, yet the number of pollen grains under the microscope was innumerable. To me, this affair was intensely interesting, and a very pleasant episode in a sick-room. The entire process can doubtless be repeated by any one, with the certainty of success, even in mid-winter. The pretty little strangers still

continue blooming on my table, and impart a cheeriness to this unusually bleak St. Valentine's Day.— S. L., *in Monmouth Democrat, Freehold, N. J.*

Plants as Doctors.—In addition to the pleasure that may be derived from Floriculture, the sanitary value of flowers and plants is a feature of the subject so important as to call for special mention. It was known many years ago that ozone is one of the forms in which oxygen exists in the air, and that it possesses extraordinary powers as an oxidant, disinfectant, and deodorizer. Now, one of the most important of late discoveries in chemistry, is that made by Professor Mantegazza, of Pavia, to the effect that ozone is generated in immense quantities by all plants and flowers possessing green leaves and aromatic odors. Hyacinths, Mignonette, Heliotrope, Lemon, Mint, Lavender, Narcissus, Cherry, Laurel, and the like, all throw off ozone largely on exposure to the sun's rays; and so powerful is this great atmospheric purifier, that it is the belief of chemists, that whole districts can be redeemed from the deadly malaria which infests them, by simply covering them with aromatic vegetation. The bearing of this upon flower culture in our large cities is also very important. Experiments have proved that the air of cities contains less ozone than that of the surrounding country, and the thickly inhabited parts of cities less than the more sparsely built, or than the parks and open squares. Plants, and flowers, and green trees can alone restore the balance; so that every little flower-pot is not merely a thing of beauty, while it lasts, but has a direct and beneficial influence upon the health of the neighborhood in which it is found. Surely, it is a beautiful provision of Nature, that something which is at once the most dainty of occupations, and most delightful of amusements, should be intimately bound up with the solution of problems so important as the health of our cities and the redemption of fever-infected districts in the country. —*Appleton's Journal.*

Plants in the Sleeping-room.—In a recent letter addressed by Professor Kedzie, of the Michigan Agricultural College, to Governor Holt, there were recorded facts which go far toward dissipating a popular error, that the presence of plants in the sleeping-room endangers the health of the sleepers. The following is an extract from Professor Kedzie's letter: "Not to leave this matter in the condition of mere conjecture, I have gathered and analyzed specimens of air from a room where the influence of growing plants would be exhibited in a greatly exaggerated form. Thus, instead of taking the air from a room containing a few plants, I gathered it from the college greenhouse, where more than 6,000 plants are growing. I gathered the air before sunrise on the mornings of April 16th and 17th; the room had been closed for more than twelve hours, and, if the plants exhaled carbonic acid to an injurious extent, the analysis of air from such a room would certainly disclose the fact. The three specimens of air gathered on the morning of April 16th, from different parts of the room, gave 4.11, 4.00 parts of carbonic acid in 10,000 of air, or an average of 4.03 in 10,000. The two specimens of air gathered April 17th gave 3.80 and 3.80 parts of carbonic acid in 10,000, or an average, on the whole, of 3.94 parts of carbonic acid in 10,000 of air; while the out-door air contains four parts in

10,000. It will thus be seen that the air in the greenhouse was better than "pure country air." This deficiency of carbonic acid was doubtless due to the absorption of carbonic acid and consequent accumulation of oxygen during daylight, since the windows of the greenhouse were closed day and night on account of the cool weather. Now, if a room in which were more than 6,000 plants contains less carbonic acid than any sleeping-room on this continent, we may safely conclude that one or two dozen plants in a room will not exhale enough carbonic acid by night to injure the sleepers."

Trout Breeding on Long Island.—The trout breeding business is becoming very extensive on the south side of the island, and is proving very profitable. Mention has recently been made of the preparations of ex-Congressman Roosevelt, Mr. Lorillard, and other well-known New Yorkers, for going into the business on an extensive scale. There is talk of other similar enterprises, soon to be started. Among the establishments already in successful operation may be mentioned the following:

Mr. Bishop, of Fire Place, two years ago conceived the idea of having a trout pond. He dug out a swamp, built a hatching-house, and formed two artificial ponds. These he stocked with a few trout, which have increased to very nearly 20,000, valued at about $10,000. The entire capital invested by him does not exceed $1,500, and his net receipts will be at least $3,000 per annum. Mr. A. J. Hines of Palace Brook, near Patchogue, hatched 50,000 trout this spring. He owns three ponds, and a hundred yards of canals.

Mr. Nathaniel Miller, of Fire Place, has erected a hatching-house and dug out several small ponds, and now owns about 15,000 trout, all obtained by artificial hatching. Messrs. Dayton & Gregory, of Canaan, own a small pond, and half an acre of land ditched out. They devote their whole time to the business, which at present nets them $3,000 a year. Mr. Nelson C. Hawkins, of Bellfort has constructed a large trout pond this season.

The Messrs. Robinson, near the Swan Creek Mill, are constructing a pond and a series of canals, and propose to go extensively into the business. Mr. Robert Bland, of Patchogue, has constructed ponds and canals, and is now engaged in stocking them. Many others are going into the business on a smaller scale. —*Shoe and Leather Reporter.*

Floral Prizes for the Poor.—Owing to the efforts of a London gentlewoman, Lady Augusta Stanley, a show of window plants cultivated by the poor of the parishes of St. Margaret's and St. John's, was lately held at Westminster. The working men and women—the term in this district meaning generally the laboring and not the artisan class—formed the first class, the children in the local schools formed the second, and the inmates, or sometime inmates, of the local workhouses and Westminster hospital made the third. The judging was in the hands of a gentleman from the Horticultural Society, and the prizes were distributed by Lord Shaftsbury in the evening, and he made a happy speech on the occasion.

It is often a surprise to American travelers to observe how many windows in the poorer parts of English and continental cities, are adorned by carefully nurtured flowering plants, displaying a degree of taste which such an occasion as the above is admirably calculated to recognize and encourage.

THE PLANTAIN.—The Plantain (*Musa paradisaica*) is one of the best gifts of Providence to the teeming multitudes of tropical lands, living as many of them do, without stated homes, and gathering food and drink as they find them, on the roadside and in the jungle. Under a friendly palm the simple peasants find needed shelter from the sun by day and the dews by night, while a bunch of Plantains or Bananas plucked fresh from the tree will furnish an abundant meal, and the water of a green Cocoanut all the drink they desire. The Plaintain tree grows to be about twenty feet in height, its round soft stem being composed of the elongated footstalks of the leaves, and its cone of a nodding flower-spike or cluster of purple blossoms that are very graceful and beautiful. Like the Palms, this tree has no branches, but its smooth, glossy leaves are from six to eight feet in length and two or more in breadth. At the root of a leaf a double row of fruit comes out half round the stalk; the stem then elongates a few inches, and another leaf is deflected, revealing another double row; and so on, till there come to be some thirty rows containing about two hundred Plantains, weighing in all sixty or seventy pounds. This mammoth bunch is the sole product of the tree for the time; after the fruit is plucked the stalk is cut down, and another shoots up from the same root; and it is thus constantly renewed for many successive years. The incalculable blessing of such a tree, in regions where the intolerable heat renders all labor oppressive, may be conceived from the estimate of Humboldt, who reckons the surface of ground needed to the production of four thousand pounds of ripe Plantains, to suffice for the raising of only thirty-three pounds of Wheat, or ninety-nine pounds of Potatoes. What would induce the indolent East Indian to make the exchange of crops?—*Lippincott's Magazine.*

ROOTING CUTTINGS OF CARNATIONS.—An amateur from Des Moines, Iowa, having complained of ill success in rooting cuttings of Carnations or Pinks, though successful with Fuchsias, Geraniums, Coleus, and Begonias, he is advised as follows by *The Agriculturist:*

"The varieties he succeeds with we all find to root quicker than the Carnation or Pink, but not more surely if the proper conditions be observed. These conditions are, that the plant of Carnation or Pink from which the cuttings are taken must be in a healthy growing condition. The temperature of the sand of the propagating bench in which the cutting is inserted should range from sixty-five to seventy-five degrees, and the atmosphere fifteen degrees less. The sand must always be kept moist, and great care must be taken that neither sun nor draught of air strike the cuttings long enough to wilt or shrivel them, for if once shrivelled nearly all hope of rooting them is gone."

CAMPANULA TURBINATA ELEGANS. — Of all the dwarf Campanulas suitable for beds, this is the most ornamental in the large and beautiful family of bell-flowers, forming as it does, a compact leaf growth, and yielding from seed a mass of comparatively large, rich, purplish-blue, white, and porcelain-white flowers during the summer months. To have it in bloom during the first season, it should be sown in the earliest spring months, and thus treated, it will flower in the summer and autumn; or, if the plants bedded one season are again divided for planting in May, these will bloom effectively in the summer months; and if sown in May, vigorous plants

will be secured for the following year. *Campanula turbinata elegans*, sent out by Messrs. E. G. Henderson, is a hybrid between *C. turbinata* and *C. carpatica*, and it is greatly superior to both its parents as a decorative summer flower. —*The Garden.*

The Agricultural Show—Pure and simple, without government patronage—is peculiarly an English institution, but English colonies seem to vie with the old country in the matter. In New South Wales, say the papers, "the opening-day is made the occasion of an almost regal pageant." Governors, members of Parliament, foreign agents, heads of the learned professions, with their ladies, all lend *eclat* to the affair. The prizes offered are small, and exhibitors have to pay for the feed consumed by their stock. But they turn out well, nevertheless; and many sales are made, which last fact is quite contrary to our experience in this country. At the last show it is said that Short-Horns changed hands to the amount of £17,000—one cow going for £1,150, and well-bred bull calves ranging from £100 to £200.

Sheep in Orchards.—J. Higgins stated at a late meeting of the Alton Horticultural Society, that he had long been in the practice of turning sheep into his Apple-orchards, and as long as they have green pasture they will not touch the bark of the trees; but they are carefully watched. He has one old sheep only that knows how good Apple-bark is. When there is snow on the ground, the sheep will of course eat the bark. But the only time when the presence of the sheep is needed, is in summer when the wormy fruit is dropping. We know a farmer in western New York who turns his sheep in his large orchard during the day, and into another field at night; they never touch the trees, and he finds the codling moth growing scarcer each successive year.—*Country Gentleman.*

Transportation of Milk.—The milk cans in which the milk is conveyed over the railways in France are made of a similar shape to ours, but the lids are so arranged that by turning a screw they can be forced down on the milk, and thus prevent all motion. The cans are wrapped in woolen cloths, and these are wet from time to time as they may need it. The evaporation of the moisture keeps down the temperature of the milk, and no difficulty is experienced in carrying it a long distance, even in warm weather.

METEOROLOGICAL RECORD,

For the Month Ending Oct. 31st, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.14 in.
do 12 M.	30.13
do 3 P. M.	30.13
do 6 P. M.	30.12
Greatest height, on the 27th at 9 A. M. and 12 M.	30.25
Least height, on the 2d at 6 P. M.	29.95

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	57°
do 12 M.	63°
do 3 P. M.	64°
do 6 P. M.	56°
Greatest height, on the 12th at 12 M.	76°
Least height, on the 21st at 6 P. M.	48°

SELF-REGISTERING THERMOMETER.

Mean height during the night	49°
Greatest height, on nights of 12th and 19th	65°
Least height, on night of 26th	39°

WINDS.

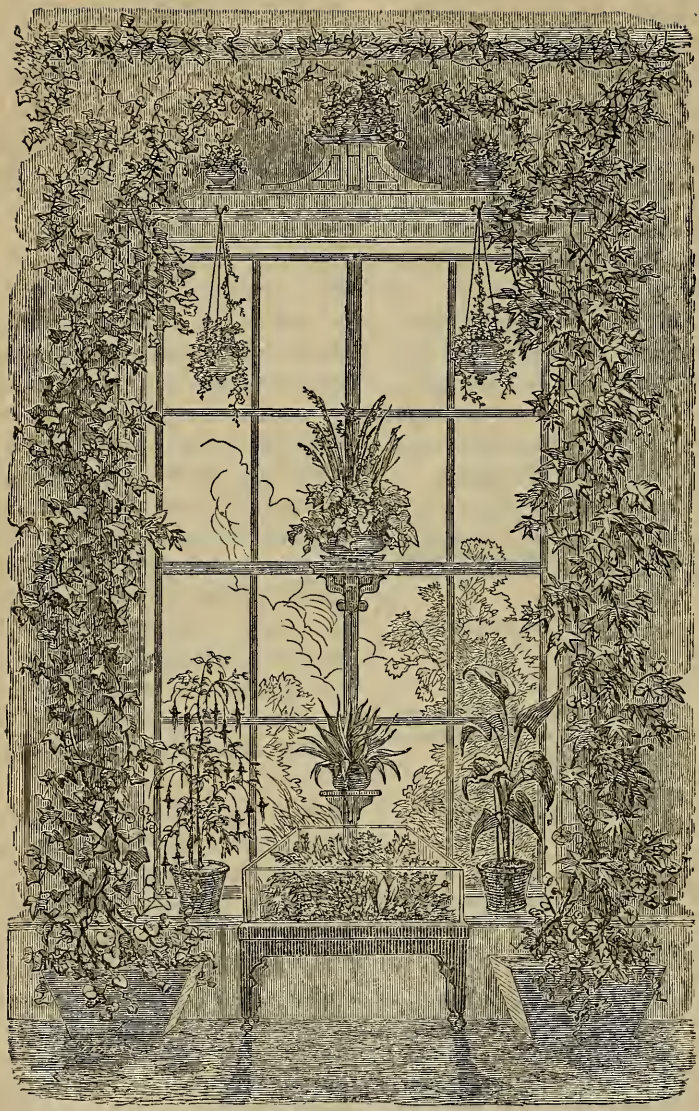
North and north-west on 13 days; south and south-west on 4 days; east and north-east on 4 days; west on 10 days.

WEATHER.

Clear on 22 days; variable on 8 days; cloudy on 3 days.

RAIN GAUGE.

October 6th	0.14 inches.
October 8th	0.54 "
Total	0.68 "
Total rain of the season up to date	0.86 "



PARLOR GARDENING.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. DECEMBER, 1873. No. 12.

OUR CALIFORNIA FERNS.

BY F. A. MILLER.

Strange as it may seem, our native Ferns are very little known, and hardly any of them are under cultivation with us or abroad. Within the last year, I have paid much attention to Ferns in general, and to our native varieties in particular, and I am pleased to say that a large number of them are very meritorious, and are much improved by proper cultivation. There are some which have not yet been classified by our botanists, and, undoubtedly, there will yet be found a great many species which are entirely unknown at the present time. I think, in another year, I shall be able to enumerate forty distinct species of native Ferns.

At present, we cultivate some twenty-five distinct varieties, and most of these seem to thrive exceedingly well under proper treatment. In making up collections of Ferns, our native kinds should not be overlooked, inasmuch as they form a decided contrast to those which are annually imported from foreign countries. There is no good reason why we should prefer foreign plants to our native ones, if these are as meritorious as the former; and yet, I must acknowledge the fact that I can sooner dispose of foreign Ferns, at a price five and ten times higher than we are in the habit of asking for our native varieties. For rockeries in the open air, our California Ferns are preferable to any others, and, intermingled with foreign Ferns in greenhouse or conservatory collections, they form a very desirable contrast.

The following varieties I have under cultivation now, and with few exceptions they have done well:

Polypodium Californicum is found nearly everywhere in California growing upon shaded rocks; under cultivation, the fronds grow much larger and finer, and almost upright. It requires no care whatever, and thrives best in a shady and moist situation. Fronds seven to eight inches long, and two inches wide, of a very bright green.

Polypodium Scouleri is one of the rarest Ferns we have, and is a very distinct form. Fronds very fleshy lobed; the fruit-dots upon the back of the frond are unusually large and showy. It is found upon rocks at the highest points of the Coast Range mountains, exposed to the heaviest winds; evergreen; behaves well under ordinary treatment; requires good drainage.

Pellæa andromedæfolia is one of a class well represented in California. All of them produce pretty and graceful fronds. This Fern is of very light green color, with brown stems. It is much improved by cultivation, and is a strong grower. Its natural habitat is under the shade of shrubs and small trees.

Pellæa mucronata is of a more upright growth; fronds delicate and graceful; dark green, with a dark brown stem. Changes its habit very much, for the better, under cultivation. It is found upon bare, dry hill-sides near the Coast Range.

Pellæa accuminata is the most graceful and delicate of this class; fronds of a sea-green color; leaflets in single rows; stems dark brown; slow grower, but otherwise improves under cultivation; it is found in the Sierra Nevada mountains, at an elevation of about 5,000 feet; not common.

Pellæa Bridgesii is one of the rarest and prettiest of our California Ferns. The leaflets are large oval, of a downy white color; stem black, producing a most pleasing effect. It is extremely slow in adapting itself to cultivation; but I have now a number of the plants which are readily producing well developed fronds. It is found in the Sierra Nevada, at an elevation of 6,000 to 7,000 feet, and grows upon bare, rocky bluffs, formed of limestone.

Pellæa densa is a pretty little dwarf-growing Fern of a peculiar form, and of a very dark green color, with brown stems.

Pellæa sp., a variety not yet described, I found associated with *Pellæa Bridgesii;* fronds growing eight to ten inches high, of a downy white color; leaflets very small.

Gymnogramma triangularis—our California Goldfern—is found in all parts of the State. It is easily cultivated, and deserves a place in every collection. Succeeds best if kept moderately moist and half shaded. The backs of the triangularly formed fronds are covered with bright golden yellow powder, with dark brown veins.

Woodwardia radicans, sp. Californica, differs from the *W. radicans* cultivated in Europe. The fronds of the former grow more upright and robust. However, our California variety is a most exquisite Fern; well-developed fronds reach the height of ten feet. The *Woodwardia* is very fond of moisture, and is found near springs and creeks. Under cultivation it thrives well, if an abundance of moisture is provided.

Aspidium argutum is found plentifully all over California; its fronds are tender, and do not bear handling; color, light green.

Aspidium munitum is found in the ravines of the Coast Range mountains, and is undoubtedly the finest native Fern. It is also found in the Sierra Nevada, but very rare, and, in my opinion, there are two distinct species. The one growing near the coast is a very strong grower, of upright habit, and light green color, while the other one, found in the Sierra Nevada, is of a dark green color, and its fronds spread close to the surface of the ground. Both are varieties well worth having, and easily cultivated.

Aspidium Californicum is my best grower, and can be most advantageously used for ferneries, rockeries, baskets, and bouquets, either in the shade or in exposed situations, in a moist or dry locality; its fronds are of a most pleasing form and color, always perfect.

Cheilanthes Californicum—a Fern which is found plentifully in the Sierra Nevada, but which I have not yet succeeded in cultivating with any degree of success. The back of the frond is

covered with a brown powder-like substance, while the face of it is of a very dark green color.

Cheilanthes gracillima is, I think, the most valuable of our Ferns; of a most distinct form and character. The form of the frond is very pretty and graceful, the color is of downy white, closely resembling that of *Cineraria maritima*. Very rarely found in the southern parts of the State.

Cheilanthes sp., a variety not yet described, and found near the boundary line of California and Arizona; of a more dwarfish growth than the former, equally as graceful; very rare.

Blechnum borealis, one of the best Blechnums that ever came under my observation. The fronds are of good substance, and perfectly hardy; a really good Fern, but not often met with, except in one or two localities of the northern part of California; plant worth having.

Cystopteris fragilis and *C. montana* are two beautiful Ferns of excellent habit, and easy culture. They are found in the Santa Cruz mountains, rather plentifully.

Botrychium sp., not yet described by any one. During last summer, I found two distinct species, which I have now under cultivation, with very fair success. The fronds are most remarkably fleshy and spreading, of a dark green color. Another species found, produces much lighter fronds, of a light green color.

Asplenium ebeneum; a pretty plant lately discovered, and giving every indication that it will figure as a valuable addition to our Ferns.

Dr. Kellogg says that he has found, during his recent stay in Yosemite Valley, a "*Woodsia.*" I have not yet been able to see the plant, and can not say anything in regard to its merits; but it is evident that a good number will be added to those already known, during the next twelve months.

TREATMENT OF THE AMARYLLIS.

BY CONRO KRETCHMAR.

The different sorts of Amaryllis are indisputably the most beautiful, and by far the most grateful in returns of bulbous plants for the green and hot house. These are also well adapted for the sitting-room. The finest kinds can be brought into bloom there, and often in the winter season, when every flower is of double value.

The Amaryllis family, like the Dracænas, Aletris, Charlivodia, Cordyline, Dianella, etc., has been divided by botanists according to the diversity in the formation of flowers, the pollen of flowers, the seed capsule, etc., etc., into different genera, viz:

1, *Amaryllis* (A. belladonna); 2, *Ammocharis* (A. ancoranica); 3, *Brunsrigia* (A. Josephine); 4, *Buphone* (A. toxicaria); 5, *Coburgia* (A. seticulata); 6, *Hyppeastrum* (A. reginæ); 7, *Lycoris* (A. aurea); 8, *Nerine* (A. sarniensis); 9, *Oporantheus* (A. lutea); 10, *Spreclia* (A. formosissima); 11, *Strumaria* (A. crispa); 12, *Vallotta* (A. purpurea).

Notwithstanding the many strictly divided or classified genera, they are to the florist and amateur, in all their varieties, a favorite flower.

Only a few species preserve their leaves through the whole year. Most of them have a period of rest, which is absolutely necessary to the perfection of a free and luxuriant flowering. The different sorts do not approach their rest at the same time—some entering upon it in summer, others in winter. It requires only a little attention to discover this. When no more new leaves

are seen, and the old ones stop growth, by degrees become enfeebled and lose their succulent green, or begin to turn yellow at the leaves, the time of rest is at hand.

If these signs are observed, watering should be withheld by degrees; and when the leaves turn yellow and wilt down, they must be deprived of it altogether. When arrived at this state, the pots containing the bulbs should be put on a back shelf in the green or hot house, or any other suitable place where they are out of the influence of the sun. They should be left there till a new growth takes place, which can be discovered in the appearance of new leaves, or a flower-bud and stem; the latter, in some sorts, making their appearance before the leaves. Then is the time to repot them. Take the bulbs from the pots and shake out all the soil from between the roots. Care should be taken not to break or wound the latter, as it will hinder their activity in growth, or bring on decay of the bulb. All sound roots should be left untouched, but the dead, rotten, or damaged should be cut off with a sharp knife. As soon as the earth has been removed, and the bulbs cleansed of all useless and dead skins, they should be replanted. For this purpose use six or seven-inch pots. Put a handful of bits of broken pots at the bottom and cover them with soil made up in the shape of a hill of the proper height, to receive the base of a bulb. Place the bulb upon it, and spread the roots evenly on all sides of it, holding the neck of the bulb with one hand, and filling in the soil with the other. Give the pots a slight shaking to settle the earth among the roots. When the pot is full, the earth should be pressed down gently, so as to leave a space of half an inch between it and the top of the pot for the reception of water. In planting, the bulb should be set so that the neck rises high above the ground; and the longer the neck, the more necessary this arrangement, so as to bring the strong influence of the sun upon the bulb, which is needful for the formation of new flower-germs.

With respect to the soil, the Amaryllis does not make as strong claims as many other species of plants. However, this rule must be strictly regarded, that no fresh undecomposed vegetable or animal matter be mixed with it, as the consequences would be the rapid decay of the bulb. The best compost for the Amaryllis is well-rotted turfy peat, or a mixture of loam and leaf mold, or hot-bed muck. To each add a good quantity of sharp white sand.

The watering of the Amaryllis should not be done in an indifferent way, but must keep equal pace with their growth. With the exception of evergreen species, they should not be watered at all during their periods of rest. When the bulbs show signs of new life, and are already repotted, if there is some moisture in the earth, do not water them for the first few days. If the soil gets very dry, or is dry already, when potting the bulb pour a little water around the edge of the pot, but do not moisten the bulb itself. In general they should be watered so that the water enters the earth near the outer edge of the pot, and never *over* the bulb, as only the ends of the root, and not the bulb itself, absorb the water, and such nutritious substances as are dissolved by it. If the growth is rapid, an abundance of water should be given. Once or twice a week a thin solution of sheep manure may be given, or horn chips, or scrapings from the combmakers worked in the soil. This is done when the roots are filling the pot, in order to perfect the flowers.

After blooming, water should be given according to the growth, and when diminishing, gradually withdrawn till the cessation of growth, when the watering should cease also.

The evergreen species should never be allowed to dry out, but must be kept moist, and at their time of growth receive a liberal supply of water.

Except during their period of rest, the Amaryllis can not be kept in too sunny a place. Their perfection, viz: a plentiful bloom, depends chiefly on the unbounded influence of the sun upon the bulbs. For this reason, whether in the greenhouse, sitting-room, or open air, the most sunny location should be chosen. The maturity, viz: the formation of the future flower-germs, is the more completely attained the more the bulb is under the influence of the sun.

The practice here and there of taking the bulbs out of the pots, and keeping them dry during their periods of rest, is in nowise to be recommended. By this method the roots dry up, and are consequently lost. However dry the bulbs may become in the pot during their periods of rest, still they will not be so dry, but that they will be enabled to start a new growth as soon as they are transplanted into fresh soil; consequently these have a great advantage over those which are deprived of their roots, and which must wait on the favors of time and nature to renew their strength and beauty.

The Amaryllis bulbs are propagated in two different ways. First, by offsets formed on the parental bulb; secondly, by seeds. The offsets are removed from the parent bulb, and repotted singly, or with several in one pot. As soon as they have reached an independent existence, they should be treated as old roots.

The seed should be sown, if the season is favorable, right after their maturity, or in the following spring. Sow them in seed pans, in a light Amaryllis compost. Water them moderately, and set them in a hot-bed. Keep a close observance of their condition, and see that a soft and equal moisture is preserved, when they will soon germinate. The seedlings require the same treatment as the offsets. If there are no hot-beds where the young seedlings or offsets can be planted out, they may be planted singly in the smallest sized pots that can be obtained. As often as the roots reach the outside of the pot, they should be transplanted to a larger sized one, without disturbing the ball of earth. The less the roots are disturbed, the sooner they will inclose the new earth again, and take their nourishment out of the same. This advice is only a *seeming* contradiction to that given in regard to the older bulbs. The latter commence annually a *new* period of growth, while the young bulbs require a growth uninterrupted, which would be intermitted if the earth was shaken from the roots, thus preventing the rapid acomplishment of their maturity.

Amaryllis bulbs imported either from Europe or their native country, are generally in a dry, shrunken condition on their arrival here, and without roots. Their condition would lead many to conclude that they should be placed immediately in the earth, and their growth renewed; but this would be the mistake of ignorance, because it might be in contradiction to the natural disposition of the species. With a knowledge of the nature of the respective species, it is easy to bring the growth of the bulb in unison with its natural period of activity; but if not thus acquainted with its nature, it is best to put the bulb into a pot of loaming sand, and set it aside in a dry place of mod-

erate temperature, where there is no danger of further shrinking in, or of premature dampness. Let their condition be under constant observation; and as soon as the least sign of growth is seen, either in the formation of the roots, or the swelling of the head of the bulb, then is the time to pot and advance the same in a raised temperature, which agrees with them. Bottom heat is best. To such bulbs the smallest pots possible should be given; but as often as they fill with roots, they should be shifted without hurting the roots.—*The Gardener's Monthly.*

Flowering of Aplectrum.—With us the flowering of *Aplectrum hyemale* Nutt. appears to be an exceedingly rare event; so much so, that close watching of the plant in our woods, for several years, on my part, has been unrewarded by a single instance of its blossoming. The experience of others corroborates the conclusion that it is a shy bloomer, at least in Michigan. I am anxious for information on the point referred to, as to other localities. A friend once succeeded in obtaining the flowers by taking up the plants in the spring, and keeping them in saucers of the rich black mould which the Aplectrum loves so well, thoroughly moistened. A plant which I once potted sent up a fine scape, several inches high, but, owing to the want of proper care during my absence from home, it did not come to perfection.

The Aplectrum was formerly well represented in the woods north of Detroit; but the encroachment of that city is fast destroying the station which was remarkable for the abundance of this now scarce plant. However, it is, even now, far from exhausted. On the 20th of April 1873, I took from a space about ten feet square, in a piece of beech woods, thirty of these plants, which I transplanted to my garden, in hope to see them blossom. I shall duly communicate the result. Some years ago, I gave several handsome roots to a Boston friend, for cultivation; but I have never heard since regarding them. Some which I have kept potted for three years invariably send up every summer their large, many plaited leaves, which remain throughout the winter as usual; but the flowers are not produced. It may be that, in order to procure the desired result, the pot should not be kept housed during the winter, but remain plunged in the open ground.

I have thought that perhaps the destruction of the native forest, depriving the plant of some element necessary to its perfect development, is the cause of its seldom or never blossoming here. This is a suggestion worthy of note as regards the history of other plants as well as of this one. Of late years the Aplectrum is, with us, of less luxuriant growth than formerly.—Henry Gillman, *Detroit, Michigan, in American Naturalist.*

The Lime or Linden, in Europe, is an important tree. Those in the town of Morat are celebrated in the history of Switzerland. One was planted in 1476, to commemorate the defeat of the Burgundians, under Charles the Bold; the other was a noted tree at the time of the battle, and is now nearly nine centuries old. But equally famous is the one at Wurtemburg, called the "Great Linden," six centuries ago. It is probably one thousand years old, and measures 35½ feet in girth. Four and a half centuries ago, its branches were supported by sixty-seven columns of stone, now increased to one hundred and six, many of which are "covered with inscriptions."

PEPPERMINT—(MENTHA PIPERITA.)

BY DR. C. A. STIVERS.

I have taken the liberty from time to time of using the columns of your journal, for the purpose of directing the attention of cultivators of the soil in this State to the various plants which might be grown with profit to themselves, and general benefit to all.

In furtherance of this plan of mine, I desire in this short article to speak of a simple little herb, which at present commands but little attention, and is cultivated but to a limited extent upon this coast, although it is one of considerable importance, and likely to yield a good return for the labor and money invested.

So common is the Peppermint herb, that it requires no description at my hands. It is a native of Great Britain, from whence it has spread over Europe and the United States, becoming as it were native even in these parts of the world.

In England and in the Eastern States, it is largely cultivated for its volatile oil—great quantities of which are used. The herb requires but little cultivation; merely a moist soil, and to be passably free from weeds. In order to maintain its flavor in perfection, and have it yield the largest percentage of oil, it is necessary to reset the roots every three years. The cutting of it should be done just as the flowers expand. The oil is obtained by distillation (which is a simple operation, and soon learned); four pounds of the fresh herb yield, according to Baumé, from one to three drams of the oil. This oil sells very readily at from $3.50 to $4.50 per pound, with a steady demand, there being nearly 500 pounds used in this city alone, per year. The dried herb is also an article of commerce, large quantities being thus prepared. At present, the bulk of the oil sold in the United States is produced in the State of Michigan, where the mint herb is raised in large quantities.

That the cultivation of the Peppermint would be remunerative in California, I have no doubt. There are vast areas of low swampy lands in the State well suited to its culture, and when we take into consideration the length of our growing season, the advantages, as all will see, must be greatly in our favor, and we might readily expect that the yield would be very large. Is not this matter worthy of a trial?

ADIANTUMS.

BY MANSFIELD MILTON, NORTH EASTON, PA.

Maiden-hair Ferns are univerally admired; no genus of Ferns being more graceful in character or better adapted for growing in glass cases than some of the species, and none excels them in the formation of bouquets. The culture of a good many of these species is very easy, and no collection of plants but ought to contain a few of them. They are propagated from spores and by division of the root.

Propagating from spores is the most interesting of horticultural operations. I shall give a few remarks upon the mode generally practiced, which may be applied to all Ferns grown from spores.

Mix a compost of small lumps of peat, charcoal, broken pieces of pots, and a good quantity of fine sand; take six-inch pots, give good drainage, and fill to about an inch of the rim with this compost; give a thorough watering, then scatter the seeds or spores evenly over the soil, laying a piece of glass on the rim of the pot, and set the pots in

pans containing about an inch of water, placing them under the stage of the greenhouse, or in some shady place where moisture and heat are plentiful. Change the water in the pans occasionally, and thus prevent the soil from souring.

On the surface of pots, on moist walls, and under stagings of houses where Ferns are grown, young plants will continually make their appearance. If those specially grown in pots, as also those coming up spontaneously through the house, are planted into flats about an inch apart, as soon as the first frond appears, and allowed to remain until large enough for potting singly into thumb pots, then judiciously managed by regular shifting, and otherwise treating properly, you will soon attain large specimens.

Adiantums thrive best in soil composed of three parts peat and one part good fresh loam, with plenty of white sand. Allow the compost to lie a few days previous to using. Give pretty large pots with plenty of drainage, which should be done thoroughly, as good drainage is indispensable to all plants requiring a good supply of water. Although a class of plants the foliage of which repels water, a good many species are very impatient with much syringing over-head, especially the *trapeziforme* group, the foliage of which gets black with too much of it.

The following are some of the most beautiful and easiest cultivated:

A. assimile.—A beautiful evergreen species with dark green foliage, from Australia, of easy culture, requiring shade and plenty of moisture. As the centre of large plants is apt to get open, it is well to divide the plants and grow in medium sized pots for handsome specimens.

A. cuneatum.—The best known of the Maiden-hair Ferns; one of the most useful for bouquet making, and easy of culture; native of Brazil.

A. colpodes.—Another beautiful Fern for cutting, requiring more heat than the preceding, being a native of tropical America.

A. concinnum.—A beautiful Fern for exhibition, having a drooping habit and very distinct; variety *lætum;* is a good deal superior in habit and general beauty. Requires plenty of heat to see its real loveliness.

A. excisum multifidum.—A garden variety, making a handsome plant when well grown, suitable for bouquet making; the apex of the frond is divided, forming a beautiful "tassel." It does well in greenhouse temperature, but attains a looser habit when grown in a stove.

A. Farleyense.—The most magnificent Fern in cultivation, having broad pendulous fronds, the sterile pinnæ being beautifully fringed. Although only introduced into England from Barbadoes in 1865, some superb plants of it are possessed by several of the London nurserymen, but two plants in the excellent collection of Mr. Such, New Jersey, are said to equal any in cultivation. Too much praise can not be given it. No one can see it without admiring its gracefulness; and none having accommodation for growing, ought to be without a plant of it.

A. formosum.—A fine greenhouse species, easily grown, and admirably adapted for cutting and exhibition purposes.

A. fulaum.—Another easily cultivated Fern from New Zealand.

A. macrophyllum.—A handsome hothouse Fern from the West Indies, having large erect-growing fronds, the pinnæ being a faint pink when young, changing to dark green.

A. tenerum.—An evergreen hothouse

species with large fronds, growing very strong with plenty of heat and moisture. From the spores of this species, *A. Farleyense* and *A. Gheesbrighti* are supposed to have been raised.

A. trapeziforme var. Lanctœ Catharinœ.—A noble Fern of easy culture, beautifully adapted for decorative purposes, requiring a brisk heat when sending up its fronds, but will do remarkably well in a greenhouse temperature. Great care should be taken not to syringe overhead, as it causes the pinnæ to get black; nor the young fronds to be handled, as it destroys them.—*Gardener's Monthly.*

HOW TO PLANT AND MANAGE HONEY LOCUST HEDGES.

We extract the following from one of Jas. D. Budd's circulars, in regard to Honey Locust Hedges:

The Honey Locust belongs to a family of plants which do not sprout, and upon which the borer never works. The Red Bud and Kentucky Coffee-tree belongs to the same sub-order as the so-called Honey Locust. The plant is Three-thorned Acacia.

As to its being a larger tree—in a hedge-row the whole character of the plant is changed. Under pruning the leaves become smaller, the branches more numerous and subdivided, and thorny, and like the Norway Spruce it seems to fall naturally into a dwarfed habit.

All this is specially indicated in the old Honey Locust hedge at Elizabethtown, New Jersey. This hedge—now over forty years established—is one mile in length, has always been "pig tight and bull strong," and is at this time pronounced by competent judges the most perfect hedge in the United States.

My own young hedges, some three or four miles in extent, some of them ready to be turned out—demonstrate the question as to developing thorns by "cutting back." This point has been much discussed by the people, as it is found that a large proportion of the young plants as they come from the nursery are destitute of thorns. I have a Honey Locust hedge eighty rods in length originally set with select plants, every one of which was thornless. The tops were cut back when set. The cutting back and check in transplanting developed thorns upon half the plants the first summer. Every plant in the whole line is now not only thorny, but intensely thorny. A Honey Locust in good soil with free growth might be destitute of thorns; crowd it into a close hedge-row and subject it to cutting back, and not only will thorns come from the axils of the leaves, but from adventitious buds along the main stems and branches. I lay it down as a positive rule, that if any plants do not attain thorns under common treatment, every one of them may be made thorny by cutting back in midsummer.

No plant used in hedging is as easy to transplant as the Honey Locust. If the plants are in good shape, with common care in setting, not one in a thousand will miss doing well. Put in hedge-row about ten inches apart. Let the plants grow all they can the first summer. In the fall mulch with coarse manure. I have found this to be a great gain, in saving the newly set plants from being thrown out and injured by frost, and it also promotes a healthy, vigorous growth the next summer. If you resolve on growing a hedge upon the pyramid cutting-back plan, cut the plant back severely each spring, just before time of starting of the sap, for the first three years after setting. The fourth and fifth summers cut back

in spring and again in midsummer, to more completely thicken up the hedge, and to develop thorns. At the end of five years, with good care, you will have a hedge that will literally turn man and beast. If a fence is needed sooner, it can be turned out against any stock at the end of the fourth summer, by stretching one wire over the top, attached to stakes driven down in the line of the hedge. These stakes should not be so long as to interfere with the after trimming of the hedge, if the stakes and wires are left in the hedge.

Flowering Shrubs.—Our flowering shrubs have, and are, giving us a profusion of bloom; one variety in particular I propose to speak of at more length, the Weigela. This is a most beautiful, and by far too rare a plant in our rural gardens. It is easily propagated from layers, or cuttings started in a shaded hotbed. This beautiful shrub belongs to the genus Dervilla, but owes its popular name to the German botanist, Weigel, who introduced it into Europe. Of this genus there are several varieties, the most disseminated of which, being first introduced, is the *Weigela rosea*—in pronouncing the name give the soft sound of g. Many seedlings have been produced from this, some of which show decided improvements over the original. *Weigela rosea* and *Weigela amabilis* are the two first introduced. Some of the seedlings are: *Isoline*, flowers nearly white when they first open, but afterwards turn to a delicate pink; *Van Houtteii* has the habit of *amabilis*, but flowers of the *Rosea Deboisiana* have buds of a dark crimson and very dark flowers, the lower lobe of which is marked with a yellow band. The foliage is very robust, of a fine dark green; bush a fine erect habit, and is a profuse bloomer. There are also several variegated-leaved varieties; one with greenish yellow leaves, another the leaves of which are of a clear cream-white. *Weigela rosea* is the popular variety, and capable of great improvement over the same as generally cultivated. This shrub is covered with a profusion of blossoms in June, pink changing to white. The bloom is so profuse that the leaves are nearly all hid from view. The shrub is of somewhat dwarf growth, growing about three feet in height, and may be trained to form a very ornamental shrub, and one to give a very much more satisfactory show than is too frequently the case. Procure a plant and train it to the tree form by rubbing out all growth from the bottom, except one main stem, for eight or ten inches; head it in and allow the top to form bushy and thick, and our word for it, you will be so much better satisfied with it, that you will hardly recognize it as the same thing as when grown as a bush. The head is formed by successive pinching in, after which the culture is no more difficult than in the other way.

The Japan Quince (*Pyrus Japonica*) is another shrub, flowering somewhat earlier than the Weigela, well worthy of more general cultivation, as they offer us buds and flowers to weave in bouquets when flowers are somewhat scarce. There are white, red, double, and orange varieties, blossoming in early spring. The Japan Quince gives us beauty in the shining glossy green of its foliage after its flowers are gone; and then for awhile its fruit possesses an interest to the studiously inclined. This shrub is susceptible of the same improvement as the Weigela, and by careful training may be made an attractive ornament of the garden.—*N. E. Homestead.*

Adorn your homes with flowers.

INDIAN AND GERMAN FORESTS.

With an extraordinary damp climate and plenty of barren soil in the northern parts of the island, we have left our woods very much to the care of nature, while we have fed our fires from our coal-fields and peat mosses, and imported the better part of our timber. It is true that some proprietors, more enlightened than their neighbors, have been borrowing ideas from systems practiced on the Continent, and introducing a certain method into their forest management. The superintendents of Crown domains —notably at Windsor and in the New Forest—have been setting examples of advance in the same direction. But it was only as they became alive to the state of matters in India, that the government took up forestry in earnest. The population of India depends on its forests almost entirely, and as these cover an enormous area, it seemed never to have occurred to any one that their resources could be anything but inexhaustible. However, the alarm at last was given, and that illusion was suddenly dispelled. It was found that the most wanton waste had made ravages which could hardly be repaired in generations: the people hacked timber when they wanted it, without any regard to housing the supply; devastation by fires was frequent; there were forest nomadic tribes who kept capriciously clearing fresh spaces by incendiarism whenever it pleased them to change their dwelling-places; in short, destruction was proceeding apace, and the proper authorities did not interpose a moment too soon. Fortunately, when they did interpose, they interposed to some purpose, and a regular forest staff has been established, directed by eminently capable men. It was necessary, however, to educate the men who were to be in charge. In India forestry was an unknown art, and even in this country it had been very much neglected. But in France considerable attention had always been paid to it, while in northern Germany it has been cultivated as a science. Accordingly young men destined for the Indian forest service have been sent to educate themselves in the German forest schools, for in Germany precept and practice go hand in hand; while more experienced officials have gone thither to make their observations and to pick up what hints they can to carry back for application in India. It is to this policy that we owe the reports of Captain Walker, Deputy Conservator of the Madras Forests, which have been lately published. His reports are the fruits of a forest tour undertaken in the course of last summer, which extended over four months and a half, and carried him through forests in Hanover, Prussia, Saxony, Bavaria, Austria, and Baden. We may observe by the way that they are supplemented by a paper by Dr. Brandis, offering valuable suggestions on the professional studies of forest officers on leave.

We imagine few people have formed a conception of the extent of the remains of a vast forest that once stretched itself all over Germany. In Hanover alone, Captain Walker tells us, there are 900,000 acres of wood under State management; while nearly a fourth part of the area of Prussia is in forest, although the half of that is in private hands. As is well known, the forest administration in particular districts has long been famous, especially in Thuringia and the Hartz mountains. In North Germany generally the responsibilities are allotted in districts among a carefully organized body of officials, presided over by a Forstdirektor, who fills the post of commander-in-chief. The appointments are

fairly remunerated as far as remuneration goes in Germany; and they are so eagerly sought after that candidates will remain on their probation for years at their own cost, or with moderate and precarious pay, in the hope of being regularly enrolled in the corps at last. In Austria things are on somewhat a different footing. The Austrian forests are magnificent—so magnificent, indeed, that the people have been in the way of taking liberties with them, just like our own Indian subjects, and the forest management has been neglected. Now they have changed all that, and the State is doing its best to repair the consequences of its negligence. But as yet the Austrian forest service is comparatively in its infancy, and the pay is very indifferent. We may give an idea of what the system is when fairly organized, by taking Hanover as an illustration. In Hanover the staff consists of the forest director and over-forest master; 20 forest masters in charge of divisions, who constitute a council of management; 112 over-foresters in charge of districts; 403 assistant foresters; 343 under-foresters, besides occasional laborers, who are employed as their services are wanted. A check is established on the finances by appointing a cash-keeper to each district; the gross income is estimated approximately at £300,000, while the expenditure amounts to £128,000. Even in North Germany it is only comparatively recently that many of the forests have been worked to the best advantage. They had been hampered with troublesome rights of common and servitudes, which gave communities and private persons a claim to take liberties with the wood, while much damage was done by exercising the rights of grazing out of place and season. It has been the more recent policy of the government to buy up all these rights, dealing very liberally with the people, and Captain Walker points out that measures of this kind are absolutely necessary in India. But even after acquiring these rights the government do all in their power to make the forest lands generally useful. Where the growth of the trees places them beyond the reach of injury, cattle are freely admitted, and in all cases where it is practicable the woods are thrown open for recreation. As for the foresters, even in the lower ranks, they are highly educated in their special line. They are not only at home in the more immediately practical branches, but they understand all about diseases and insect plagues and the remedies for them. Of merely mechanical woodcraft they are masters. In the Black Forest especially, Captain Walker, with all his Indian experience, marveled at the adroitness with which they manage to bring down great trees, so that in their fall they should not injure the saplings. Then they have certain tools in use, simple enough in appearance, but which are exceedingly useful in their hands, and which might be adopted with advantage in England or India. The krempe, for instance, something between an adze and a pickaxe, is one, which lays fast hold of the trunks and exerts an extraordinary leverage; and by the aid of the krempe and a rope or two Captain Walker has seen half-a-dozen men do such work as they use elephants for in India.

We shall not trouble our readers with the valuable technical information Captain Walker collected as to methods of rotation, clearing, cutting, sowing, planting out, etc. What is of more general interest is his account of his visit to the Prince Furstenberg's forest at Rippoldau in the Grand Duchy of Baden. The forest is opened up in all directions by a regular system of roads arranged in-

to two classes. The first of these is twice the width of the other and carefully constructed with solid masonry, wooden bridges, etc. But most curious are the "Riesen," or slips, down which the timber is shot to the streams, and the artificial modes of floating the interminable rafts. The slips at Rippoldau are about six feet wide, and pieces of wood or rollers are placed along them at intervals of a couple of feet. The trough is formed of smooth timber stripped of its bark, so that there shall be little friction on the stems as they glide down it. Where the curve is too sharp the slip is disposed at something approaching a right angle; and the trunk which has been shot so far is turned by means of the krempe, and then launched forward on a fresh start. Three hundred stems can be sent down one of these slips in a single day. As for the mode of floating the timber, that must be seen to be believed, as Captain Walker remarks. The little mountain stream is cleared of its bowlders, and its bed prepared with pieces of cross-timber as the "Riesen" are. The water is dammed back in reservoirs, and, strange to say, the floating takes place when the stream is unusually low. The floss or float consists of stems of full-grown trees loosely knotted together at the ends by ropes of bark, and the length of the whole float is frequently 2,000 feet. "My first impression," Captain Walker remarks, "when I saw the floats . . . . lying zigzag in the bed of the mountain stream, was that it was simply impossible that they could ever be floated, still less steered down the stream with all its windings, and over the locks and rocks which occurred pretty frequently." The front consists of two or three stems abreast, with a prow formed like the bow of a whale-boat. "When all is ready, the water from above is let loose, and the raft or rafts which have hitherto been lying in the bed of the stream, which has probably not more than a foot of water in it, begin to float a little, but are not let go until about two-thirds of the water has passed. . . . . When let go it is exceedingly curious to see the forward part dart off at the rate of five or six miles an hour, and the several pieces or links which have been lying zigzag and more or less high and dry, gradually uncoil themselves and follow in its wake, till the whole dashes along apparently uncontrolled." Strange to say, sometimes when the decline is steep, the raft travels faster than the water, but if the stoppages are not too frequent, it can do its fifty miles a day. When it arrives at the Kinzig it is broken up and formed into those large rafts which are familiar to all travelers on the Rhine. In short, these reports of Captain Walker's will be found to combine entertainment with instruction, and had we more space to devote to them, we should invite our readers to accompany him on his excursions to the Scotch and English forests.—*Pall Mall Gazette.*

Asparagus and Manure.—I have tried all kinds of manure for Asparagus plants, and all sorts of treatment. Nothing, however, produced such a rank and thick growth as fresh cow manure. We have often used horse manure well rotted, and salt, and various other applications. But the pure cow manure, spread over the bed about three inches thick, proved the best. The year before the last we had the most wonderful growth, and, as we believe, entirely from this cause. We always leave our stalks until they are about one foot high before cutting them; we fancy they are much better, and we know we get three times as much vegetable food fit to eat.—*Exchange.*

The Mode of Life of Roots.—As the duties of the roots differ in the various plants, so do their modes of life vary. Some live wholly in the water, others (and these by far the greater number) live in the obscurity of the soil, while others, again, fasten upon the trunks and branches of plants larger than themselves. In the shape of the roots we find a corresponding diversity. Some are short and thick-set, as witness those of the beet and radish, from which fine, thread-like rootlets shoot out, in order to feed the main root; others are long and slender; some creep along near the surface of the ground, while others, again, dive deep down into the earth, as though seeking to penetrate its innermost secrets. But all, great and small, thick-set and slender, are provided with a wonderful amount of energy and perseverance, never failing, if unmolested, to perform the work allotted them with no small degree of intelligence.

Let us here give you an instance of this intelligence, which we learned but a few days since, from the lips of an eye-witness.

Most of our readers have doubtless seen descriptions of that beautiful orchid of the Isthmus of Panama, the Espiritu Santo, or Flower of the Holy Ghost, so called because of the wonderful representation of a dove, with bowed head and folded wings, which forms the centre of the pulpit-like flower. For some years the natives, regarding the plant with superstitious reverence, carefully concealed the knowledge of its existence from all foreigners; but at length it was discovered, and several bulbs were carried into the city of Panama, where they were planted in boxes, and assiduously nursed, but without success. The bulbs withered, and dried, and were at last thrown away in despair—a despair that proved their salvation. Cast out upon a heap of rubbish and stones, the bulbs, no longer buried in the earth by an ignorant master, exulted in their freedom, and striking down their roots through the stones, came back to life and vigor. Those bulbs knew (what their captor did not) that if buried, or even *half*-buried, in the earth, they must die; but note with what cogence and intelligence they seized upon the chance of life the moment it was accidentally thrown in their way! *They* knew, as the "lord of creation" did *not*, that their long, slender rootlets alone could be sunken into the earth. Says my informant, a scientific gentleman: "The bulb should be supported, above ground, by stones, until the roots have taken sufficient hold to steady it. This is the natural condition of the Espiritu Santo, and only thus will it flourish."—*Helen Harcourt in To-Day.*

Foliage Plants.—A great mistake is made by many in the arrangement of the garden, in not giving sufficient attention to foliage plants. A bed of flowers may be ever so rich, and the display of colors may be dazzling, but if there is no frame-work of living green, the effect on the eye is rather painful than otherwise. The fault of many gardens is, too much glare. Masses of brilliant flowers—red, yellow, white and scarlet—are grouped together, until the garden is all aflame with radiant colors, and its very gorgeousness is oppressive.

How refreshing it is to the eye to have here and there a clump of rich, dark-green foliage to rest on! While the gaudy hues of the flowers have a tendency to aggravate the heat of the summer day, the living green of the foliage is suggestive of cool, refreshing shade. In every flower garden there should be borders of emerald turf as a frame-work

to the beds, and to occupy space not allotted to the flowers. Foliage plants can be used with fine effect interspersed with the flowers, and in every garden green should be the predominant color, or ground, while the flowers form the embroidery.

In the arrangement of flowers in vases and baskets the same order should prevail. A bouquet without a background of cedar, arborvitæ, or some other evergreen, is never complete, and is all the more perfect if ferns and grasses are interspersed.—*Ex.*

UPON THE TERM "NATURAL," AS APPLIED TO LANDSCAPE.

BY E. J. HOOPER.

It is well for us to consider certain general laws by which Nature is governed in the grouping of plants, and the development of their forms; and it is highly important for us to endeavor to understand these laws. It is often denied that one scene is any more natural than another, if they are each the growth of Nature. An orchard, say these objectors, is just as natural as a wild forest, and a garden of tulips as natural as a tract of wild pasture, thickly overgrown with indigenous herbs, flowers, and shrubbery. Though, I think, it can not be denied that one is the production of Nature as well as the other, yet the former deviates more widely from the process, the direction and the forms of vegetation which Nature causes to appear on the face of the earth, when she is left to her own spontaneous efforts.

I will here speak of the importance of imitating the *modus operandi* of Nature, when developing landscapes and laying out pleasure-grounds, with the design of obtaining from them the greatest amount of enjoyment both to the eye and ear. It has been denied by some, much to my surprise, that the pursuit of this course will insure a more favorable result than by following one that is strictly artificial, as in the Dutch garden, or geometric style. I will freely admit that in horticultural operations, as in the planting of nurseries, arboretums, and beds for florists' flowers, any attempt to imitate Nature would be as absurd as to attempt it in a corn-field or in the kitchen garden. The objectors remark that the tangled wilderness is far from agreeable, either as a place for recreation or as a scene for the entertainment of the eye; that it is destitute both of beauty and comfort, and that we always take more pleasure in a garden that is well kept, than in one that is overgrown with weeds. These objections are based on a misconception of the true meaning of the natural as distinguished from the artificial in landscape. There is a vagueness in the significance of the terms which it is rather difficult to clear up. I am dsiposed to apply the term natural to all scenes in which art has wrought in harmony with Nature; and I believe it will be found that in all old settlements, a pleasure-ground that extends beyond the space of an acre will afford satisfaction to the visitor in proportion as it is made to resemble the work of Nature, without her defects.

In the close vicinity of our dwelling-houses it is useless to attempt an imitation of Nature in the embellishment of the inclosures. Neatness, beauty, and convenience are to be regarded above all other considerations. But in more extensive tracts, which are designed for rural recreation, the more nearly we can imitate the ways of Nature, consistently with the attainment of other needful purposes, the more satisfaction shall we

derive. There is an air of freedom and seclusion about a place that seems entirely inartificial, that fills the soul with the most agreeable emotions. We feel secure from interruption, and a pleasing sense of our right to ramble and loiter there. The first highly-wrought fence, or other artificial structure, immediately suggests the idea that we may be trespassing, and that we may meet some one who, as guardian or proprietor, may dispute our right to enter upon his grounds. It does not follow that there is anything like envy combined with this feeling; but every object that is palpably artificial produces a sense of constraint, and damps the poetic emotions of solitude. Though the proprietor of a place may feel disposed to disregard these influences on the minds of strangers, I am confident that, in the same proportion as, on any account, it would fail in exciting agreeable emotions in the minds of others, it would also fail in yielding pleasure to him and his family.

Though complete and uninterrupted solitude would be hardly preferable to death, yet every man of reflective mind delights in occasional retirement. He loves to go out so far in the fields and woods that he may not be liable to interruption; and he feels this charming seclusion most powerfully in scenes of native wildness, or in those in which the planter or landscape gardener has designedly or otherwise imitated the spontaneous ways of Nature. How much I experienced these feelings when last summer I visited that wild and romantic estate—Napa Soda Springs—near the city of Napa, covered with the finest Oaks and a variety of other beautiful forest-trees, shrubs, and wild flowers of every hue, through the natural grounds of which long winding walks, rustic bridges, and seats, and stone steps, led in every direction to waterfalls, towering cliffs, shaded recesses, Fern wildernesses, and other objects of rural, picturesque, and natural attractiveness. No sooner does the visitor of such charming scenes perceive this apparently careless irregularity, unmixed with the too elaborate, costly works of art, than he feels he is alone, as I did there. If, at the same time, as I experienced on these premises, the solitary birds of the wilderness are seen and heard around him, the emotion of solitude is the more vividly impressed on the mind. Indeed, this feeling is seldom complete, until he hears those wild notes from creatures that cautiously avoid the busy town and its vicinity. It seems to me, therefore, an important principle in the art of creating landscape, that there should be present in it everything agreeable that is found in a wildwood, and that everything prominently artificial should be excluded that would disturb those poetic feelings which are awakened by the real scenes of Nature.

(Conclusion next month.)

THE PARLOR GARDEN.

[SEE ILLUSTRATION, FRONTISPIECE.]

It is not always easy to cultivate ornamental plants in an inhabited room; still, far from complaining of this difficulty, we should, on the contrary, congratulate ourselves, for is it not a great pleasure to attempt a difficult thing and succeed in doing it? We would not, however, have this remark discourage the beginner; very limited appliances and means, with the ordinary experiences gained in a surprisingly short space of time, will afford much of gratification and of pleasure. The extent to which parlor-gardening can be carried on, the kinds and varieties of plants it may em-

brace, the time of the year in which we can occupy ourselves in it with the most pleasure and success; all this varies according to the space we may have at our disposal, and the fitness of the situation for the experiments. We shall take into consideration all these things, as they present themselves in the natural course of ordinary life.

Watering.—Plants confined within our dwellings require watering, some rarely and sparingly, others often and profusely; but it should always be with water of the *same temperature* as that of the earth in which they are placed. This is a very important point, and one upon which most people who have flowers in pots in their chambers are perfectly ignorant. You, ladies, do yourselves like a comfortable degree of warmth; so, also, do your plants. Yet mark what frequently happens. Some beautiful Camellia is your delight, and, to judge by the profusion of buds with which it is loaded, it promises a splendid bloom in the early months of the year. You have, in the meantime, been enjoined not to fail to water it when required, and this injunction you punctually fulfill. But in what way? You go to the sideboard for the water-jug; you find it empty; you at once have it replenished from the tap or the pump, the water of which is of an exceedingly low temperature, and this you pour upon the roots of your favorite Camellia! Suppose some one were to pour icy water upon your feet, would not the shock make you cry out? Your Camellia, although silent, does not suffer less. Its sap, that was in full activity, slackens—stops—and that it may begin to flow again, all the buds drop one after another; not a single one can bloom! The best thing to be done is to place in the chamber a vessel containing the quantity of water necessary to water the plants next morning. This water and the earth in the pots will then become of the same temperature.

[To be continued.]

Editorial Portfolio.

We have battled through another year, and the present number closes the third volume of the "California Horticulturist and Floral Magazine," which our spirited publishers have embellished with many excellent illustrations.

In reviewing the labors of the past twelve months, we feel sincerely thankful to our many contributors for the very many excellent articles which have appeared in our periodical.

To our numerous subscribers we beg to express our gratitude for their support, and to assure them it will be our endeavor to render the ensuing numbers additionally interesting and instructive; and from the abundant promises of valuable assistance which we have received from many able practical men, we feel confident that our magazine will, by a large accession to our original articles, be still more acceptable in the future to our readers.

Our programme for the ensuing volume will comprise the important and varied subjects of Irrigation, Forest and Tree Culture, Floriculture, Horticulture in all its branches; the Botany of the Pacific Coast, with original notes of some of the enterprising and persevering explorers of the present day; papers on indigenous Ferns and Orchids, and on the Algæ of this coast; while our columns will be open to occasional contributions and selected articles on various kindred subjects: and by exercising all due care in the selection and revision of whatever appears in our numbers, we hope to render our magazine so far acceptable to our numerous readers as

to insure us the much-extended support which a publication of this kind requires.

REPORTS OF SOCIETIES.

REPORT OF THE SECRETARY OF THE BAY DISTRICT HORTICULTURAL SOCIETY.—*Gentlemen:*—In submitting this Third Annual Report to you, I can not do otherwise than express a feeling of regret that our Society is moving so slowly in accomplishing its mission; unfortunately its financial condition is not of a very encouraging nature. The interest taken in the Society by the public, is not, I am sorry to say, equal to the severe task of fostering and developing the horticultural and floricultural products which the State of California is capable of producing.

It can not be denied that a Horticultural Society is a most important institution in a new country, and particularly so where the resources are unlimited. The usefulness of such a Society consists not only in the discussion of subjects pertaining to Horticulture — in pointing out what our State might produce, and in exhibiting the products of our soil under the most favorable circumstances to the public—but to be of real service to our State, and to the people who occupy its lands, the discussions and deliberations of practical men should be made public by its means and disseminated throughout the rural districts. The trees, shrubs, and plants which, after mature deliberation, are considered of a useful as well as ornamental character, and adapted to our soil and climate, should be introduced by the Society, and acclimatized, in order that their fitness and usefulness may be practically demonstrated at its exhibitions, with the resultant success in all its variations brought about by the influences of soil, climate, and other conditions.

This, I am well aware, can not be done with the resources at your command at the present time, which are barely sufficient to cover the expense of room-rent, gas, and petty incidentals. To enable you, therefore, to make yourselves more useful to the public, you must increase your revenues, which at present can only be done by adding regular members. It will be strange, indeed, if the population of California can not or will not sustain an institution of this kind, and swell the list of its regular members to a number sufficient to accomplish your purpose. It is my opinion, that a sufficiently strong effort to do this has not yet been made. I would also call your attention to that portion of your Constitution and By-Laws, which grants life-membership on payment of twenty-five dollars. This is too small an amount compared with the requirements of other less important and less useful societies.

True, that during the past year a class of men have been admitted as members of this Society, of which we may well be proud; but there are hundreds more, I believe, who would help you along financially and practically, if this aid was solicited in a proper way.

It is the opinion of horticulturists in this State, that an Experimental Garden should be established, for the purpose of introducing new and desirable trees, plants, etc. Such a garden might be properly conducted under your su-supervision. And if a suitable appropriation were made by the State for that purpose, an immense benefit might be derived from it.

The subject of forest culture has been thoroughly discussed during the last two years, and our scientific men are unanimous as to the many benefits

which the State would derive from a proper system of forest culture. Your Society should be a strong advocate of this industry, and be instrumental in soliciting proper legislation on the subject.

We have no one to protect and advance the interest of Horticulture on this coast. The politicians seem to have no time for the consideration of laws intended to effect useful internal improvements. We must show a bold front, and demand proper legislation for the development of our most important resources and industries.

In the laying out and the maintenance of our public squares, parks, and grounds, many abuses and blunders have been committed, and thousands of dollars have been squandered by injudicious management; contracts have been made, without due public notice, in favor of a few, when in many cases evidence can be produced that the work of laying out grounds, furnishing material, trees, and shrubs, could be done much better, and in a more workmanlike manner, for one-half the amount actually expended. I think the attention of the public should be called to these defects, and the officials who have the management of these affairs should be exposed.

During the year 1873, the Society held two exhibitions, one in the spring and another in the autumn. While the Spring Exhibition was confined to the display of useful and ornamental trees, shrubs, and plants, the Autumn Exhibition consisted of a general display of various horticultural, floricultural, and pomological products. Both of these exhibitions were most meritorious, and the highest praise is due to all who aided in the efforts of the Society to make the display worthy of the reputation which California enjoys at home and abroad. The arrangements in the hall for the Spring Exhibition were in most pleasing and elegant style, and nothing was wanting to render the display most successful. At the Autumn Exhibition the Fruit department was most complete, and the best ever made in San Francisco. The exhibition of Apples was the best ever made in the State.

In the department of Plants, the new and rare plants of recent introduction were most promising features, and attracted universal attention.

The quality of trees and plants was invariably better than ever before, and our nurserymen and florists showed a great deal of perseverance and sacrifice of time in cultivating specimens particularly and especially for the exhibitions. In regard to variety and quality of plants, it is conceded that much has been gained during the past two years.

A most meritorious exhibit of preserved fruits and jellies was displayed, which was certainly the best ever placed on exhibition in San Francisco.

Although the Society may well feel proud in accomplishing so glorious a result, it is a most lamentable fact, that both of the exhibitions were financial failures, the Society sustaining severe losses; which demonstrates clearly that without the aid of a suitable appropriation from the State, similar to the one made for the past two years, it would be impossible to continue similar exhibitions. For this reason, besides many others, it is to be hoped that the Legislature, which is to meet during the coming winter, will act promptly in voting the necessary aid for the continuance of our Horticultural Exhibitions.

Various circumstances plainly point out the error which was made in holding two exhibitions in one year, and

the suggestion is timely, that one exhibition annually is all that can be expected.

Much gratified at the appreciation, by a numerous and enlightened portion of the community, of our untiring labors to advance Horticulture and Floriculture in all their branches, and encouraged by a strong hope that during the coming year the revenues of the Society will be increased three-fold, I am respectfully yours, F. A. MILLER,

Secretary.

WOODWARD'S GARDENS.

These Gardens have become an indispensable necessity to that enlightened portion of our community who, having families, avail themselves of this invaluable opportunity for combining recreation with instruction in educating their children; and instead of merely transient explorations at wide intervals, we perceive that it has become a practice with many parents to make continuous and oft-repeated visits, attended by the children, making use of the Guide and Catalogue (of which a great number have been sold) to assist in identifying the many objects of interest. This is as it should be. It is the best, and most pleasant, effective mode of imparting instruction; and the vast and increasing number of noteworthy objects stimulate the curiosity and please the eye, while the memory is more readily impressed with facts and forms received under a condition of pleasurable excitement. We notice that while some discursively wander over the entire grounds at every visit, on the butterfly principle, nevertheless enjoying themselves and picking up much knowledge; others, more systematic, confine their attention to one department at a time. Sometimes it is Botany which is ardently studied; at another time it is Mineralogy; again it is Zoology, and either the birds or the animals receive exclusive attention. Nor are the children with their parents the only students. Many visitors from widely distant sections of the country make these Gardens a resort, as well as the more mature and educated members of the community—the latter, like the Athenians of old, in search of something new, in which they are frequently gratified, as the energetic proprietor is continually adding new attractions, modifying, and improving, and purchasing whatever will increase interest and gratify the public. The Aquarium is being remodeled; and the replacing of the thinner glass with its supporting bars by the heavy and costly sheets, (some of them an inch in thickness), is a magnificent improvement. The glazing of the Aviary for the smaller and more delicate birds (of which several hundreds have been recently added) with plate glass, is also a decided and noteworthy change for the better. Great alterations are being made in the accommodation for the animals in the amphitheatre; and many other additions and improvements are in progress. The Conservatories are in fine order, and a considerable number of new plants, etc., have been received from the East and Europe.

CATALOGUES RECEIVED.

Vick's Floral Guide, for 1874—An excellent catalogue, copiously illustrated. It is published quarterly, 25 cents per annum, and may be obtained of James Vick, Rochester, N. Y.

We are in receipt of *Catalogue No.* 3, of Messrs. Miller & Sievers, 27 Post Street, San Francisco—a copious catalogue of choice and well selected plants, etc.; and we doubt not that our floral

friends will award to these energetic and enterprising gentlemen the support they so richly deserve for their industry and perseverance in importing for the market of California the rich variety of new and rare plants, etc., etc., which are detailed in their lists, at such moderate prices.

OUR EXCHANGE TABLE.

The Horticulturist.—A journal of rural life, etc., published by Henry T. Williams, 5 Beekman Street, New York, $2.50 per annum—a monthly magazine, replete with valuable information.

The Gardener's Monthly, price $2 per annum; published by Chas. H. Marot, 814 Chestnut Street, Philadelphia, and edited by Thos. Meehan—a very excellent monthly.

The Ladies' Floral Cabinet, monthly, by Henry T. Williams, New York. Very good and useful; price 75 cents per annum.

The California Farmer, by Warren & Co., San Francisco, Cal., $4 per annum.

FAVORS RECEIVED.

We have to acknowledge the receipt of the Annual Report, for 1873, of the Hon. Frederick Watts, Commissioner of Agriculture at Washington.

We are indebted to E. W. Bruswell, Esq., Treasurer and Corresponding Secretary of the Massachusetts Horticultural Society, for a catalogue of the library of that institution, copious, and comprising many valuable works.

The Overland Monthly.—The December number of this excellent monthly is, by courtesy of the publishers, before us. It is, as usual, replete with interesting matter: "Chips from an Indian Workshop," "Life in Mazatlan," "New Zealand," "Parks and Pleasure Grounds," and "Seeking the Golden Fleece"—all well written and interesting articles. "Etc." and "Current Literature" have all their usual discriminating character and piquancy.

We are indebted to Messrs. Tucker & Son, of Albany, N. Y., for their *Illustrated Annual Register of Rural Affairs*, for 1874. This is a very concise and useful publication, and contains much valuable information. Price 30 cents.

WORK FOR THE MONTH.

BY F. A. MILLER.

We have had sufficient rain to begin winter operations in our gardens, and the weather is now most favorable for outside work of all kinds. As a rule, I would advise all to prepare the ground early and to plant early, with the exception of such plants and trees as are not quite hardy.

Lawns and flower gardens ought to have a good top-dressing of manure, which may be allowed to remain on the lawn or grass-plat for a few weeks, in order that all the fertilizing ingredients may be washed into the ground by the occasional rains, while the manure spread over the flower borders should be dug into the ground by trenching the soil to the depth of twelve inches.

Pansies which have been sown in September or October may now be planted out where they are desired; the soil for them should be particularly enriched and well prepared. Our winter season is the season for Pansies, Violets, Daisies, Primulas, Aubrietias, and all other hardy border-plants, and they will do better if they are transplanted at this time.

If any of the Gladiolus and Dahlia

roots still remain in the ground, they should be taken up at once and stored away in a dry, airy place. Gladioli which were planted in September will flower now and during the coming month. We have a fine lot in full bloom out-of-doors at present, which were planted in September; and as bright flowers are now becoming scarce, they help us out to a great extent. I can say the same of Lilium auratums, which are exceedingly well adapted for winter flowering out-of-doors, if they are planted in August and September in some protected place.

Those who have not already planted the Hyacynth, Narcissus, Crocus, etc., should not delay to do so, both for the garden and the house. Tulips, I am satisfied, ought to be planted early to do well in California. Planting late in the season is the cause of frequent failures. All of the bulbs and roots named will do best in a warm and sunny exposure, protected from strong winds.

This month is still a favorable time to plant your Rose-cuttings, both in frames and in the open ground. If planted in frames, a moderate bottom heat should be provided; if planted in the open ground, the cuttings ought to be at least four inches long, and of a strong healthy wood. Prepare the ground well and deeply before planting, and if too heavy, add some sand. Some of our deciduous shrubs grow well from cuttings made in the same way, and the wood is now in a proper condition for that purpose. There is no necessity for planting the cuttings immediately, if not convenient; they may be tied up and kept in a shady place, and partly covered up with soil. Some Tea and Bengal Roses, which make very little new wood in comparison with the more robust-growing Perpetuals and Bourbons, would be better grown in frames, as short cuttings of three or four eyes only are required under this method.

The plants in the greenhouse and conservatory must now be kept rather dry, as all the soft-wood and succulent varieties are apt to damp off during our cool nights, particularly in wet weather.

Tender plants in our greenhouses and conservatories suffer not so much from the effect of cold as from dampness, and to have the Begonia, Coleus, Maranta, and other tender ornamental foliage plants, do well during our winter months, some artificial warmth should be provided. The various kinds of apparatus in use for heating, in the East and in Europe, are too expensive for us. We require some mode which will give a moderate amount of warmth during the nights and the cold rainy days, which will disperse and rarify some of the moisture which penetrates our greenhouses and does so much mischief. The thermometer rarely falls below 45 or 50; and I think that, with a very simple heating apparatus, we may be able to keep above 55. At our nurseries we are now introducing a very simple and cheap apparatus, which I think will answer the purpose.

Unless bottom heat (which can be made of fresh manure and tan-bark) can be applied, propagating, at this time, can not be safely undertaken; and at the same time it is a well-established fact, that greenhouse plants in general should be propagated in October, November, and December. In fact, these three months answer very well for the propagation of hardy plants also. Artificial heat is therefore most desirable for such work.

The want of flowers is particularly felt during our winter months, and with a small degree of warmth, our plants in the greenhouses and conservatories may be kept in full bloom throughout the

winter. Under all circumstances the houses should be well ventilated when the weather permits it.

Unless plants can be kept in a growing condition by artificial heat, they will do much better in small pots. I would therefore caution against the over-potting of plants. Last winter we kept tender foliage plants in a remarkably good condition in three-inch pots, while those in large pots suffered most.

The necessity for thorough drainage at the bottom of the pots and boxes is imperative, and should be looked after at once. A good effect is also produced by the application of warm water, whenever the plants actually need moisture.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

The extension of those three great improvements—Railways, Telegraphs, and Fruit-growing—make notable the last thirty years as a remarkable and wonderful era in the progress of man. The benefits conferred by the extensive cultivation of fruit-trees are almost equal in importance with those of the first two combined. Hardly anything has occurred in the history of man which can compare with the extent of fruit gardens and orchards which have been, and still are being, set out year by year. All the nurseries in every part of the world are annually pouring forth their millions of trees into every country, and yet the demand for them fully equals the supply. There is a reason for all this. One is the discovered value of fine fruit, and the other is the loss of myriads of young trees by bad management and the want of care in defending them from the damage of cattle, etc. On these two points I propose to offer a few remarks.

First, on the value of fruit: On this subject but few words will be needed, for the whole community are rapidly discovering that a few acres of orchard—particularly if convenient to a market—often yield more profit than all the rest of a large farm, and that one to three hundred dollars per acre annually is no unusual return, under good management; while, in rare cases, a single tree will nearly pay for an acre of ground by the product of one season only. Besides this, not a few are learning that a good supply for family use saves a great many hard-earned dollars which otherwise are yearly paid to the miller and butcher, or what is the same thing, an equal amount forwarded to market. The use of apples alone, where a constant supply may be had for baking, stewing, for puddings and for pies, saves to many families at least a hundred dollars annually; and by using rich, high-flavored sorts, the use of hundreds of pounds of sugar is obviated, otherwise required for sweetening and supplying the requisite flavor. But this is so well understood, that I need not dwell upon the subject any longer, except merely to allude to the pleasure and satisfaction which it must afford everyone to be furnished with a succession of delicious fruits, which our California affords during the whole of the year, commencing with Strawberries for six to eight months at least, and including Cherries, Currants, Raspberries, Blackberries, Apricots, Nectarines, Pears, Plums, Peaches, Apples, and Grapes, some of which may, with care, be had for use during every day of the year.

In relation to management a great deal may be profitably said. The ground for every orchard and fruit garden, in

the first place, should be properly enriched, if it is not naturally as productive as is common in our State; secondly, the trees should be well set out; and thirdly, and most important of all, good and constant cultivation must be given. There is no "royal road" to the raising of good fruit; and an orchard requires attention and labor quite as much as a field of corn or potatoes.

Here is the great and fatal error of a large portion who attempt the cultivation of fruit: 1st. Those who have procured their trees destroy them at once by drying them in the sun or wind, or freezing them in the cold, before setting out. 2d. Those who destroy them by crowding the roots into small holes cut out of a sod, where, if they live, they maintain a stunted and feeble existence, like the half-starved cattle of a neglectful farmer. 3d. Others set them out well, and then consider their labors as having closed. They are subsequently suffered to become choked with grass, weeds, or crops of grain. Some live and linger, others die under the hardship, or else are demolished by cattle, or are broken down or their bark wounded by the team which cultivates the ground. All low *hoed* crops are best for young orchards, such as Beans, Turnips, Field-beets, and Carrots. Sown grain crops are bad, and meadows still worse. But even hoed crops operate in some degree as weeds, and hence the most successful orchardists keep the whole surface in clean, mellow cultivation, without any crop whatever, and find it most profitable. The only exception they make is in planting a portion of the space in very young orchards, several feet distant from each tree.

Mulching, in connection with a mellow surface, will, in addition to proper irrigation, be a great assistance in long droughts. This is nothing more than covering the ground about the tree with old straw, coarse barn-yard litter, leaves from the woods, saw-dust, tan, or other material tending to retain the moisture of the soil, which is otherwise constantly escaping from the earth below. It is usually applied much too thinly, and in much too small a circle about the tree. We all know the roots extend to a great distance. It is better to leave a small space uncovered immediately about the trunk, otherwise mice or insects may harbor under it and eat or injure the bark.

In laying out ground for transplanting it is absolutely necessary to know the distances for each sort. If too remote from each other, a waste of land is the result; if too near, they crowd each other (rather common in California), and prevent the growth and ripening of the fruit to the best advantage. The usual distance for Apples in this region is about twenty-five to thirty-three feet; Pears, fifteen to eighteen feet; Peaches, twelve to fifteen feet; Cherries, fifteen feet; Plums, fifteen feet; Apricots, eighteen feet; Quinces, eight feet; Grapes, eight feet; Gooseberries and Currants, four to five feet; Raspberries and Blackberries, three to four feet.

But it is time to refer to the condition of our markets. The effects of winter can now be plainly traced on the fruit stalls. Most of the summer fruits have disappeared, and what remain are of course of poor quality, and find but slow sale at low prices. About the 27th of October there arrived a large shipment of Oranges from Tahiti, commanding ready sale at 75 cents to $1 per dozen. There were but few changes in the prices of vegetables up to the last of October, some of which begin to show the effects of frosty nights. Tomatoes were still tolerably

abundant, and of fair quality; but the supply of Green Corn, Summer Squash, and Cucumbers was nearly at an end. String Beans, Green Peas, and Okra were very scarce and higher.

Many of the Strawberry patches were visited by frosts, and the supply of fruit was very light. The few coming forward, however, met with ready sale at high prices. Peaches were out of market, and Plums were very scarce; Apples and Pears plentiful at former rates. Grapes were still abundant, but a large portion of them had been frosted and were of inferior quality. The market was well supplied with Malaga and Sicily Lemons, and a few from Los Angeles were received by each steamer. Bananas were quoted at 50 to 75 cts. per dozen; Pomegranates, $1 per dozen; Smyrna Figs, 35 cts. per dozen; Apples, by the box delivered, 75 cts. to $1; Pears, $1 to $2.

There was no change in the prices of food about the 20th of November. Of Grapes, at that time, Mission was still quoted at 8c. per pound; Black Hamburg and Muscat, each 12½c; Tokay, 15c; and Black Morocco, 15 to 25c. The Rose of Peru variety became then out of season. A few boxes of White Napoleon made their appearance occasionally, and sold readily at 15c. per pound; Blue Plums, 20c; Pears, Apples, Oranges, Limes, and Lemons continued at the then last week's prices. The contest between the Italian gardeners and the Board of Supervisors being at an end, the market resumed its former equilibrium. We quote Cabbage Sprouts at 12½c; Asparagus, 50c; Dried Okra, 50c; Red Pepper, 50c; Green Pepper, of which there are three kinds in the market, 15@25c. per pound; Red Cabbage, 10@15c. each; Carrots, 20c. per dozen bunches; Green Corn, 50c. per dozen ears; Black Radish, 20c. per dozen bunches: Kale, 50c. per dozen; Celery, 10c. per head. On the 21st of November the supply of summer fruits was nearly out.

The Italian gardeners, after resuming their occupation of Sansome Street, were, by the trial of a case in law against them, compelled to vacate that location. During the late strike it transpired that, notwithstanding the injury done to housekeepers through the high prices they were compelled to pay generally for vegetables, occasioned by the inadequacy of the supply from first hands, the gardeners themselves were the principal sufferers. The sales of vegetables by the Italian gardeners from their wagons are computed at $3,000 per day, making the aggregate loss during the period of suspension from $18,000 to $20,000. The stock of vegetables in first hands accumulated so much during that time that an overabundance glutted the market. The larger Greens, such as Cabbage and Cauliflower, rotted for want of purchasers at almost any price. Notwithstanding the existence of such a state of things among the gardeners themselves, retail green-grocers succeeded pretty well in keeping up the prices—that is, the decline from the retail famine prices to those above quoted did not correspond with the decline of the wholesalers' quotations. These middlemen thus reaped abundant harvests, while the grower and consumer suffered. At the beginning of this month the vegetable gardeners commenced to return to Sansome Street, and this movement has been tolerated by the city authorities at present.

The feature in vegetables the latter part of last week was the appearance of new Potatoes from the Presidio, and they retailed at 12½ cts. per pound. Asparagus was more plentiful, but still

sells at 50 cts. per pound. Green Peas and Tomatoes are abundant. Strawberries have been scarce for a time, and have brought fancy prices. What of those that came from Solano County? This is late for this fruit, certainly. The first Medlars have arrived, and are retailing at 20@25c. per pound; Bananas, 50@75c. per pound; Pomegranates, $1 per dozen; Smyrna Figs, 35c. per pound; Apples, by the box delivered, $1@1.75; Pears, $1@1.75.

The stormy weather is now said by the retail dealers to be retarding gardeners from bringing their produce to market, the roads leading to the city being in an almost impassable state. Artichokes are 75 cts. per pound, and Asparagus sells at the same figures. There are two varieties of Orange offered, from Los Angeles, and the Lorado Orange from Mexico. The former variety is quoted at $1 per dozen, and the latter at 75 cts. Grapes are as follows: Mission, 12½c; Muscat, 15c; Tokay, 15@25c; and Black Hamburg, 25c. per pound.

No Strawberries have been received during the past few days, and no more are expected until warm pleasant weather returns. The feature in the fruit market this week has been the arrival of the first of the new crop of Los Angeles Oranges. This shipment came three weeks earlier than the first last season, and are quite as ripe, though rather too sour to sell readily. Small consignments of Peaches continue to arrive from Solano County, but do not meet with ready sale.

Otto of Roses.—*The Attar or Otto of Roses*, most precious of all perfumes, is made almost entirely among the Balkan mountains. There are at least one hundred and fifty places where its preparation is carried on, the most important of all being Kizanlick. The Roses are planted in rows, like vines. The flowers are gathered in May, and with the green calyx leaves attached, are subjected to distillation. Five thousand pounds of Roses yield one pound of oil.

Planting Slips.—*The Gazette des Campagnes* recommends to dip the extremities of the slip in collodion, containing twice as much cotton as the ordinary material used in photography. Let the first coat dry and then dip again. After planting the slip, the development of the roots will take place promptly. This method is said to be particularly efficacious in woody slips, Geraniums, Fuchsias, and similar plants.

METEOROLOGICAL RECORD,

For the Month Ending Nov. 30th, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.16 in.
do	12 M.	30.16
do	3 P. M.	30.15
do	6 P. M.	30.15
Greatest height, on the 16th at 9 A. M.		30.33
Least height, on the 14th at 6 P. M.		30.03

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		54°
do	12 M.	59°
do	3 P. M.	60°
do	6 P. M.	54°
Greatest height, on the 9th at 12 M.		73°
Least height, on the 26th at 9 A. M.		46°

SELF-REGISTERING THERMOMETER.

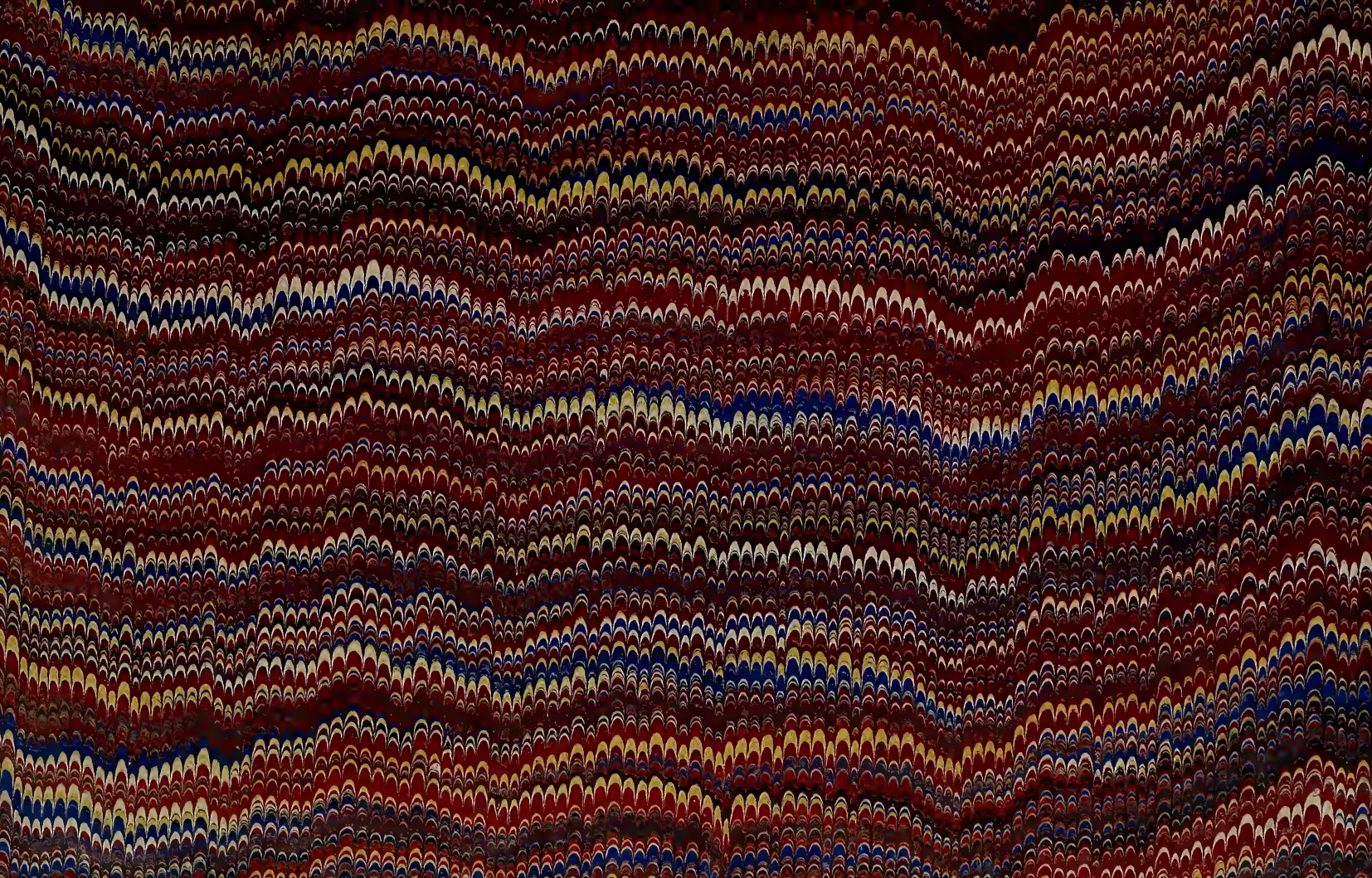
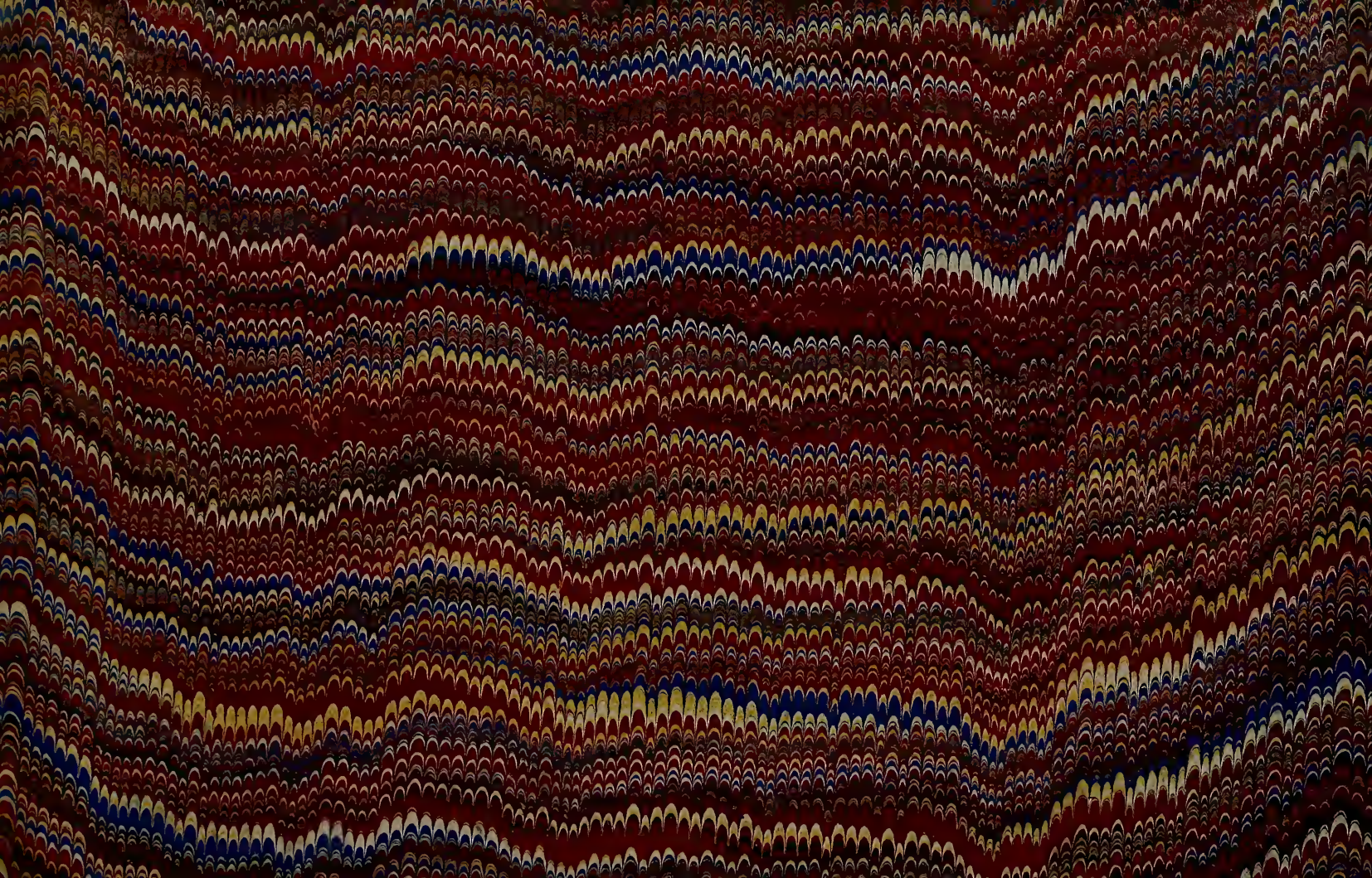
Mean height during the night	48°
Greatest height, on night of 6th	54°
Least height, on nights of 2d, 3d, 25th and 26th	43°

WINDS.

North and north-west on 12 days; south and south-west on 5 days; east and north-east on 2 days; west on 11 days.

WEATHER.

Clear on 9 days; variable on 7 days; cloudy and foggy on 14 days.

RAIN GAUGE.

November 5th	0.14	inches.
" 6th	0.20	"
" 13th	0.07	"
" 21st	0.06	"
" 29th	0.06	"
" 30th	0.78	"
Total	1.31	"
Total rain of the season up to date	2.17	"